Access DB# 182315

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Trung, Duc Examiner #: 69332 Date: 3/15/06
Art Unit: 1711 Phone Number 30[illegible]-[illegible] Serial Number: 10/509,765
Mail Box and Bldg/Room Location: [illegible] Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____

Inventors (please provide full names): _____

_____

Earliest Priority Filing Date: _____

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Formula (I) and/or (II) and/or (III) in claim 1. Thanks

****

STAFF USE ONLY	**Type of Search**	**Vendors and cost where applicable**
Searcher: EL	NA Sequence (#)_____	STN _____
Searcher Phone #: _____	AA Sequence (#)_____	Dialog _____
Searcher Location: _____	Structure (#) _____	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr.Link _____
Date Completed: 3-17-06	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: _____	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: _____	Other _____	Other (specify)_____

PTO-1590 (8-01)

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FILE 'REGISTRY' ENTERED AT 09:43:43 ON 17 MAR 2006
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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     FILE 'LREGISTRY' ENTERED AT 09:06:40 ON 17 MAR 2006
L1                STR
L2                STR L1

     FILE 'REGISTRY' ENTERED AT 09:25:54 ON 17 MAR 2006
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     FILE 'LREGISTRY' ENTERED AT 09:26:32 ON 17 MAR 2006
L4                STR

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L5              7 S L2 AND L4
L6            168 S L2 AND L4 FUL
                  SAV L6 TRU765/A

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L7            116 S E3
L8                STR

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L11         18988 S ?ISOTHIOCYAN?/CNS
L12           157 S L6 NOT L10

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L16             6 S L14 AND L15
L17            11 S L13 OR L16
L18            46 S L14 NOT L17
L19        213691 S REFRACT?
L20            27 S L18 AND L19
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L24           0 S L22 SSS FUL SUB=L6

     FILE 'HCA' ENTERED AT 09:40:27 ON 17 MAR 2006
L25          57 S L6
L26           6 S L25 AND L15
L27          36 S L25 AND L19
L28          31 S L27 NOT L26

     FILE 'REGISTRY' ENTERED AT 09:43:43 ON 17 MAR 2006


=> d l24 que stat
L2              STR

    22
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     S 21
     :
G2:G1:S:C          C~C          C:S:C          C @16       S:C
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Page 1-A

24 S E1     27 S E1

Page 1-B
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NSPEC   IS RC     AT   4
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NSPEC   IS RC     AT  22
CONNECT IS E2  RC AT   3
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CONNECT IS E1  RC AT  24
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CONNECT IS E1 RC AT 27
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DEFAULT ECLEVEL IS LIMITED

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NUMBER OF NODES IS 16

STEREO ATTRIBUTES: NONE
L4 STR

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STEREO ATTRIBUTES: NONE
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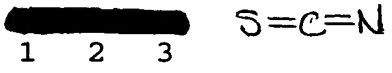

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STEREO ATTRIBUTES: NONE
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100.0% PROCESSED 0 ITERATIONS 10 ANSWERS
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=> file hca
FILE 'HCA' ENTERED AT 09:43:53 ON 17 MAR 2006

=> d l26 1-6 cbib abs hitstr hitind

L26 ANSWER 1 OF 6 HCA COPYRIGHT 2006 ACS on STN
143:479022 High refractive index thiourethane-based optical materials with high Abbe number and good heat resistance. Kuma, Shigenori; Morishiri, Hiroyuki; Tanaka, Mamoru; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2005325183 A2 20051124, 18 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2004-142986 20040513.

AB Title polythiourethanes are prepd. from **isothiocyanate** having 1,3-dithiolane-4,5-diisocyanate and (B) thiol components contg. polythiols having .gtoreq.2 mercapto groups and .gtoreq.1 structure selected from dithioacetal, dithioketal, orthotrithioformate, and orthotetrathiocarbonate. Thus, 1.0 mol di-Me 2,3-dimercaptosuccinate and 1.0 mol formaldehyde were reacted at 114.degree. in the presence of 0.05 mol p-toluenesulfonic acid, 0.49 mol of the resulting di-Me 1,3-dithiolane-4,5-dicarboxylate was reacted with 1.0 mol hydrazine monohydrate at 5.degree. for 12 h to give 4,5-di(hydrazinocarbonyl)-1,3-dithiolane, 0.39 mol of which was mixed with 0.80 mol 35% aq. hydrochloride soln., 0.80 mol sodium nitrite was added therein and reacted at 5.degree. for 2 h, the resulting org. phase was dried, added in 500 mL toluene at 80-100.degree. and heated at 110.degree. for 2 h to give 1,3-dithiolane-4,5-diisocyanate, 49.7 g of which was mixed with dibutyltin dichloride 50, Zelec UN 100, and Viosorb 583 50 mg, 50.3 g a thiol component contg. 1,1,3,3-tetrakis(mercaptomethylthio)propane, 4,6-bis(mercaptomethylthio)-1,3-dithiane, and 2-[2,2-bis(mercaptometylthio)ethyl]-1,3-dithiane, poured into a mold, heated from 40.degree. to 130.degree. for 20 h to give a test piece, showing refractive index 1.723, Abbe no. 31, and glass transition temp. 154.degree..

IT **869724-88-9P**, 4,6-Bis(mercaptomethylthio)-1,3-dithiane-2-[2,2-bis(mercaptometylthio)ethyl]-1,3-dithiane-1,3-dithiolane-4,5-diisocyanate-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer **869724-89-0P**, Bis[4,4-bis(mercaptomethylthio)-1,3-dithiabutyl]-mercaptomethylthiomethane-4,5-di(hydrazinocarbonyl)-1,3-dithiolane-1,1,5,5-tetrakis(mercaptomethylthio)-2,4-dithiapentane-tris(mercaptomethylthio)methane copolymer

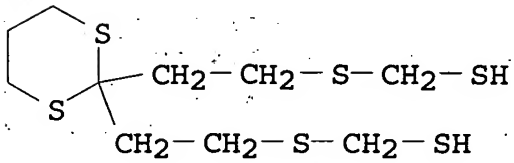
(high refractive index thiourethane-based optical materials with high Abbe no. and good heat resistance)

RN 869724-88-9 HCA

CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 4,5-diisocyanato-1,3-dithiolane, [1,3-dithiane-4,6-diylbis(thio)]bis[methanethiol] and [1,3-dithian-2-ylidenebis(2,1-ethanediylthio)]bis[methanethiol] (9CI) (CA INDEX NAME)

CM 1

CRN 869724-87-8
CMF C10 H20 S6



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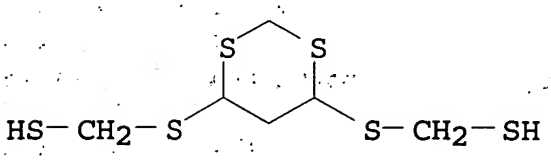
CMF C6 H12 S6



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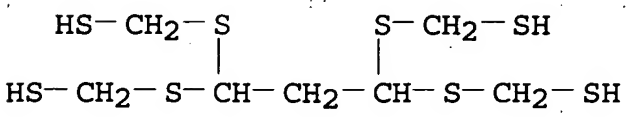
CRN 363138-81-2
CMF C7 H16 S8



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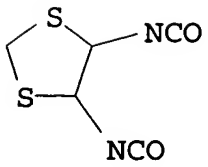
CRN 149962-90-3
CMF C5 H4 N2 O2 S2



RN 869724-89-0 HCA
CN 1,3-Dithiolane-4,5-dicarboxylic acid, dihydrazide, polymer with 3,7-bis[(mercaptomethyl)thio]-2,4,6,8-tetrathianonane-1,9-dithiol, 1,1',1''-[methylidynetris(thio)]tris[methanethiol] and 3,7,11-tris[(mercaptomethyl)thio]-2,4,6,8,10,12-hexathiatridecane-1,13-dithiol (9CI) (CA INDEX NAME)

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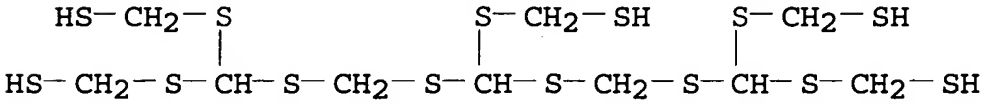
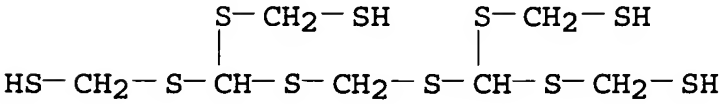
CRN 614753-26-3
CMF C10 H22 S14



CM 2

CRN 568565-58-2
CMF C7 H16 S10



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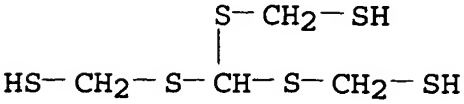
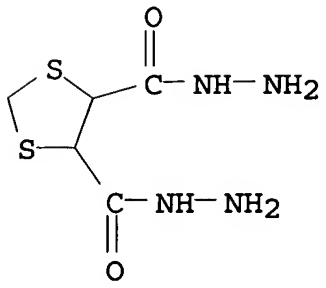
CRN 568565-57-1
CMF C4 H10 S6



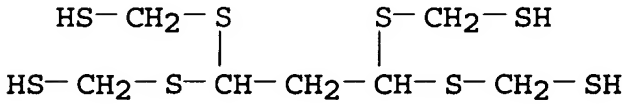
CM 4

CRN 189141-19-3
CMF C5 H10 N4 O2 S2

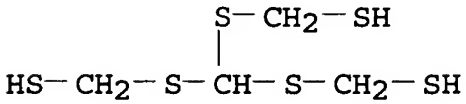


IT **363138-81-2P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane
568565-57-1P 568565-58-2P 574615-89-7P
614753-26-3P 869724-87-8P
(monomer; high refractive index thiourethane-based optical materials with high Abbe no. and good heat resistance)

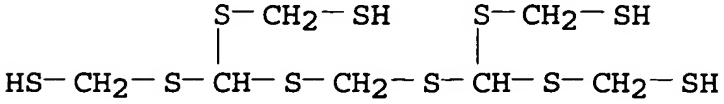
RN 363138-81-2 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis- (9CI) (CA INDEX NAME)



RN 568565-57-1 HCA
CN Methanethiol, 1,1',1''-[methylidynetris(thio)]tris- (9CI) (CA INDEX NAME)

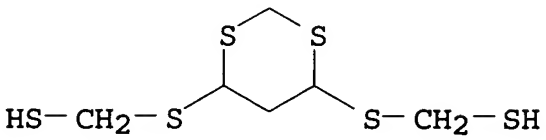


RN 568565-58-2 HCA
CN 2,4,6,8-Tetrathianonane-1,9-dithiol, 3,7-bis[(mercaptomethyl)thio]- (9CI) (CA INDEX NAME)

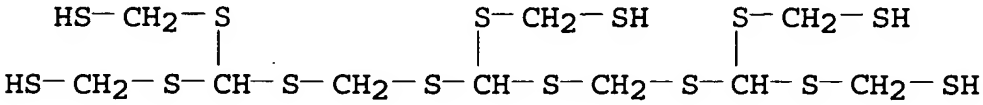


RN 574615-89-7 HCA

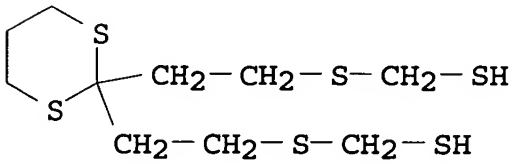
CN Methanethiol, [1,3-dithiane-4,6-diylbis(thio)]bis- (9CI) (CA INDEX NAME)



RN 614753-26-3 HCA
CN 2,4,6,8,10,12-Hexathiatridecane-1,13-dithiol, 3,7,11-tris[(mercaptomethyl)thio]- (9CI) (CA INDEX NAME)



RN 869724-87-8 HCA
CN Methanethiol, [1,3-dithian-2-ylidenebis(2,1-ethanediylthio)]bis- (9CI) (CA INDEX NAME)



IC ICM C08G018-38
ICS C08G018-77; G02B001-04
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 74
IT **869724-88-9P**, 4,6-Bis(mercaptomethylthio)-1,3-dithiane-2-[2,2-bis(mercaptometylthio)ethyl]-1,3-dithiane-1,3-dithiolane-4,5-diisocyanate-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer **869724-89-0P**, Bis[4,4-bis(mercaptomethylthio)-1,3-dithiabutyl]-mercaptomethylthiomethane-4,5-di(hydrazinocarbonyl)-1,3-dithiolane-1,1,5,5-tetrakis(mercaptomethylthio)-2,4-dithiapentane-tris(mercaptomethylthio)methane copolymer
(high refractive index thiourethane-based optical materials with high Abbe no. and good heat resistance)
IT 149962-90-3P **363138-81-2P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane **568565-57-1P** **568565-58-2P** **574615-89-7P** **614753-26-3P** **869724-87-8P**
(monomer; high refractive index thiourethane-based optical materials with high Abbe no. and good heat resistance)

L26 ANSWER 2 OF 6 HCA COPYRIGHT 2006 ACS on STN
143:78972 Perfume-containing sulfur-containing optical material and its preparation and application as plastic lens. Yamamoto, Akinori; Iryo, Takeaki; Saito, Toru (Seiko Epson Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2005163008 A2 20050623, 15 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2004-144858 20040514. PRIORITY: JP 2003-382495 20031112.

AB Title optical material for plastic lens contains 0.001-0.5 parts perfume selected from citronellal, cineole, Me anthranilate, Et anthranilate, di-Me anthranilate, limonene, .alpha.-terpineol, Et heptoate, Me heptoate, iso-Pr heptoate, vinyl heptoate, Me caprylate, Et caprylate, Me nonanoate, and Et nonanoate. The optical material is selected from a poly(thio)urethane prepd. from compds. contg. .gtoreq.1 isocyanate and/or **isothiocyanate** or polythiol or polyol, a thioepoxy resin, and a sulfur-contg. vinyl polymer, and plastic lens produced from the above resin is also provided. Thus, m-xylylenediisocyanate and 4,8-dimercaptomethyl-1,11-dimercapto-3,6,9-trithiaundecane/4,7-dimercaptomethyl-1,11-dimercapto-3,6,9-trithiaundecane/5,7-dimercaptomethyl-1,11-dimercapto-3,6,9-trithiaundecane were polymd. in the presence of dibutyltin dichloride catalyst, UV absorber, and di-Et anthranilate perfume to receive a polythiourethane resin without bad smell during process.

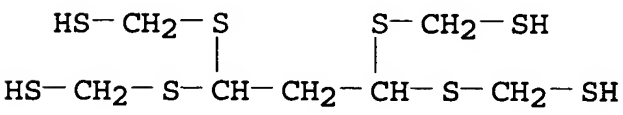
IT **363138-86-7P**
(prepn. of perfume-contg. sulfur-contg. optical material as plastic lens)

RN 363138-86-7 HCA

CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 1,3-bis(isocyanatomethyl)benzene (9CI) (CA INDEX NAME)

CM 1

CRN 363138-81-2
CMF C7 H16 S8



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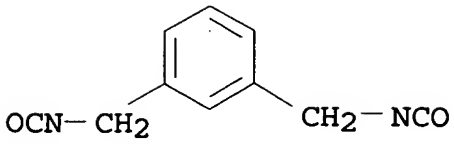
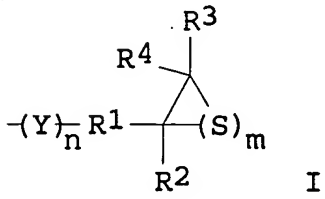
CRN 3634-83-1
CMF C10 H8 N2 O2



IC ICM C08L101-02
ICS C08G018-38; C08K005-00; C08L075-04; C08L081-02; G02B001-04
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 73
IT 170016-52-1P 170016-53-2P 170016-54-3P 311778-70-8P, Bis(2,3-epithiopropyl)disulfide-4,8-Dimercaptomethyl-1,11-dimercapto-3,6,9-trithiaundecane copolymer 344927-28-2P 344927-29-3P **363138-86-7P** 855120-15-9P
(prepn. of perfume-contg. sulfur-contg. optical material as plastic lens)

L26 ANSWER 3 OF 6 HCA COPYRIGHT 2006 ACS on STN
142:24342 Production method of optical materials with high refractive index. Horikoshi, Hiroshi; Okada, Hiroyuki; Takeuchi, Motoharu (Mitsubishi Gas Chemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2004339329 A2 20041202, 46 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-136528 20030514.

GI



I

AB The present invention relates to a prodn. method of optical materials obtained by reacting prepolymers of compds. contg. .gtoreq.1 structure I and inorg. compds. having sulfur atom and/or selenium atom and prepolymes of compds. having .gtoreq.1 isocyanate and/or **isothiocyanate** group and compds. having .gtoreq.1 mercapto group, wherein R1 = H or C0-10 hydrocarbon; R2, R3, R4 = C1-10 hydrocarbon or H; Y = O, S, Se, or Te; m = 1-5; and n = 0-5. Thus, 75 parts bis(.beta.-epithiopropyl)sulfide and 15 parts sulfur were reacted, mixed with reaction products of 3 parts 2,5-diisocyanatomethyl-1,3-dithiane and 7 parts 2,5-dimercaptoethyl-

1,3-dithiane, dibutyltin dichloride 0.05, 2-(2-hydroxy-4-octylphenyl)-2H-benzotriazole 1.0, 2,6-di-tert-butyl-4-methylphenol 0.05, Daiaresin Blue G 0.0005, jasmine oil 0.05, and tetrabutylphosphonium bromide 0.1 parts, molded, and heat-treated at 110.degree. for 1 h to give a test piece with no white turbidness and no striae.

IT **799833-73-1P**
(prepn. of optical materials with high refractive index)

RN 799833-73-1 HCA

CN 1,3-Dithiane-2,5-dimethanethiol, polymer with 2,5-bis(isocyanatomethyl)-1,3-dithiane, sulfur and 2,2'-[thiobis(methylene)]bis[thiirane] (9CI) (CA INDEX NAME)

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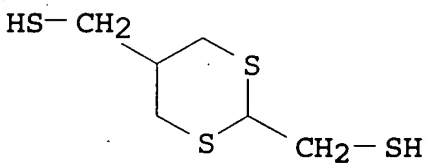
CRN 799833-72-0
CMF C6 H12 S4



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CRN 799833-71-9
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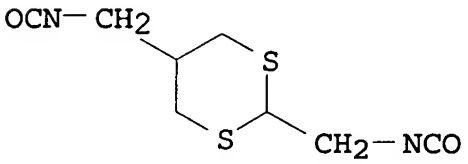
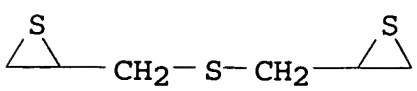


CM 3

CRN 188829-97-2
CMF C6 H10 S3



CM 4

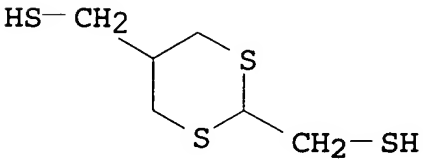
CRN 7704-34-9
CMF S

S

IT **799833-75-3DP**, reaction products with sulfur, polymers with isocyanate/**isothiocyanate** compds. **799833-78-6P 799833-80-0P 799833-82-2P**
(prepn. of optical materials with high refractive index)
RN 799833-75-3 HCA
CN 1,3-Dithiane-2,5-dimethanethiol, polymer with 2,5-bis(isocyanatomethyl)-1,3-dithiane, 2,2'-[dithiobis(methylene)]bis[thiirane] and sulfur (9CI) (CA INDEX NAME)

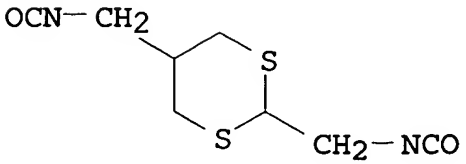
CM 1

CRN 799833-72-0
CMF C6 H12 S4



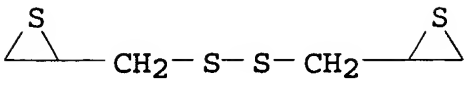
CM 2

CRN 799833-71-9
CMF C8 H10 N2 O2 S2



CM 3

CRN 98485-71-3
CMF C6 H10 S4



CM 4

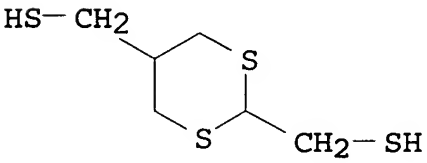
CRN 7704-34-9
CMF S

S

RN 799833-78-6 HCA
CN 1,3-Dithiane-2,5-dimethanethiol, polymer with 2,5-bis(isocyanatomethyl)-1,3-dithiane, 2,2'-[selenobis(methylene)]bis[thiirane] and sulfur (9CI) (CA INDEX NAME)

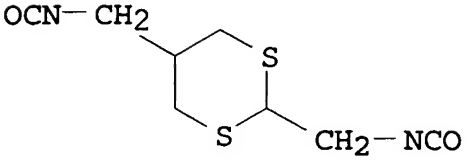
CM 1

CRN 799833-72-0
CMF C6 H12 S4



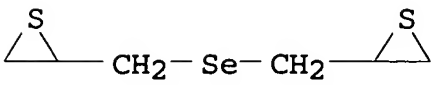
CM 2

CRN 799833-71-9
CMF C8 H10 N2 O2 S2



CM 3

CRN 212634-38-3
CMF C6 H10 S2 Se



CM 4

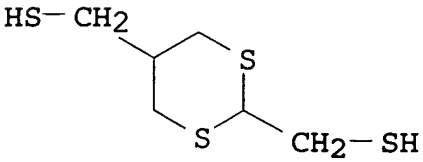
CRN 7704-34-9
CMF S

S

RN 799833-80-0 HCA
CN 1,3-Dithiane-2,5-dimethanethiol, polymer with 2,5-bis(isocyanatomethyl)-1,3-dithiane, sulfur and 3,3'-[thiobis(methylene)]bis[1,2-dithietane] (9CI) (CA INDEX NAME)

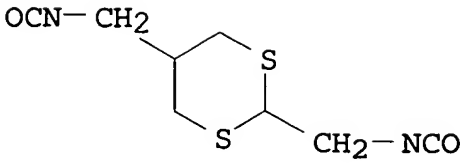
CM 1

CRN 799833-72-0
CMF C6 H12 S4



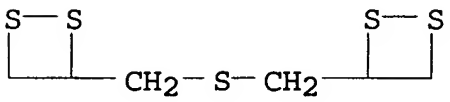
CM 2

CRN 799833-71-9
CMF C8 H10 N2 O2 S2



CM 3

CRN 286377-07-9
CMF C6 H10 S5



CM 4

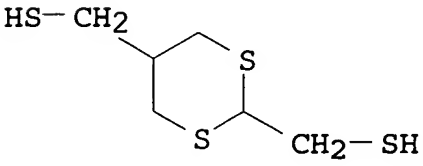
CRN 7704-34-9
CMF S

S

RN 799833-82-2 HCA
CN 1,3-Dithiane-2,5-dimethanethiol, polymer with 1,3-bis(isocyanatomethyl)benzene, sulfur and 2,2'-[thiobis(methylene)]bis[thiirane] (9CI) (CA INDEX NAME)

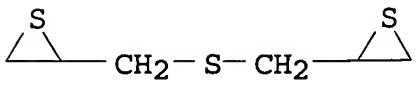
CM 1

CRN 799833-72-0
CMF C6 H12 S4



CM 2

CRN 188829-97-2
CMF C6 H10 S3



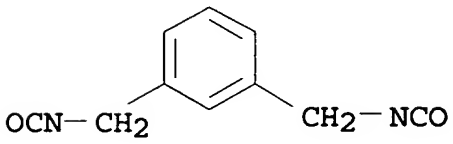
CM 3

CRN 7704-34-9
CMF S

S

CM 4

CRN 3634-83-1
CMF C10 H8 N2 O2

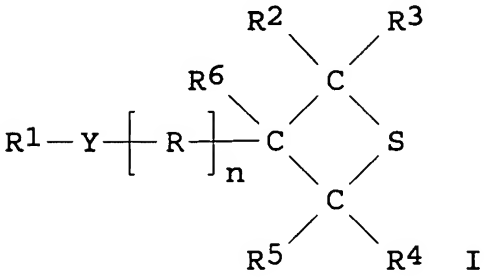


IC ICM C08G081-00
ICS G02B001-04; G02B003-00
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 74
IT **799833-73-1P**
(prepn. of optical materials with high refractive index)
IT **799833-75-3DP**, reaction products with sulfur, polymers with isocyanate/**isothiocyanate** compds. **799833-78-6P** **799833-80-0P** **799833-82-2P**
(prepn. of optical materials with high refractive index)

L26 ANSWER 4 OF 6 HCA COPYRIGHT 2006 ACS on STN
139:246479 Polymerizable composition containing novel cyclic sulfur compound and resin obtained by curing the polymerizable composition. Kobayashi, Seiichi; Morijiri, Hiroyuki (Mitsui Chemicals, Inc., Japan). PCT Int. Appl. WO 2003074588 A1 20030912, 117 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK,

LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2003-JP2189 20030227. PRIORITY: JP 2002-55774 20020301.

GI



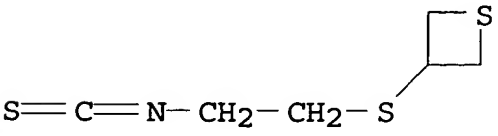
I

AB A cyclic sulfur compd. having a structure represented by the formula (I) was claimed, wherein R1 represents hydrogen, a reactive terminal group, or a linear, branched, or cyclic C1-10 (thia)alkyl, aryl, or aralkyl group having a reactive terminal group; R2 to R6 each independently represents hydrogen or an (un)substituted C1-10 monovalent hydrocarbon group; R represents an (un)substituted C1-10 divalent (thia)hydrocarbon group; n is an integer of 0 to 3; and Y represents any of oxygen, sulfur, selenium, and tellurium, provided that when Y is oxygen, then R1 is not a group having (meth)acryloyl. A polymerizable compn. contg. the compd. gives a resin having a high refractive index, a high Abbe's no., and excellent impact resistance. Thus bis(3-thietanyl) sulfide prepd. from 3-chlorothietane was polymd. to give a resin with refractive index of ne = 1.701 and ve = 36, d. of 1.41, and good transparency and appearance.

IT **597580-41-1P**
(intermediate; prepn. of polymerizable compn. contg. novel cyclic sulfur compd. and resin obtained by curing the polymerizable compn.)

RN 597580-41-1 HCA

CN Thietane, 3-[(2-isothiocyanatoethyl)thio]- (9CI) (CA INDEX NAME)

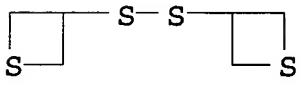


IT **597580-45-5P 597580-46-6P 597580-47-7P**
597580-48-8P 597580-49-9P 597580-50-2P
597580-53-5P 597580-54-6P 597580-56-8P
597580-57-9P
(prepn. of polymerizable compn. contg. novel cyclic sulfur compd. and resin obtained by curing the polymerizable compn.)

RN 597580-45-5 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 3,3'-dithiobis[thietane] (9CI) (CA INDEX NAME)

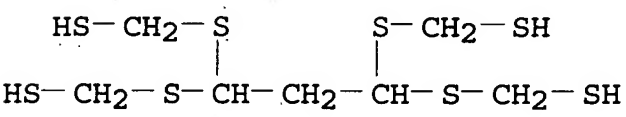
CM 1

CRN 597580-27-3
CMF C6 H10 S4



CM 2

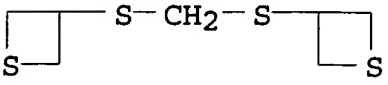
CRN 363138-81-2
CMF C7 H16 S8



RN 597580-46-6 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 3,3'-[methylenebis(thio)]bis[thietane] (9CI) (CA INDEX NAME)

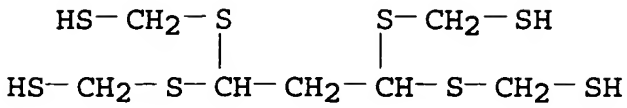
CM 1

CRN 597580-28-4
CMF C7 H12 S4



CM 2

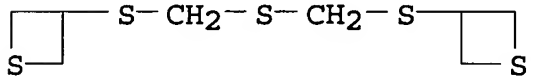
CRN 363138-81-2
CMF C7 H16 S8



RN 597580-47-7 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 3,3'-[thiobis(methylenethio)]bis[thietane] (9CI) (CA INDEX NAME)

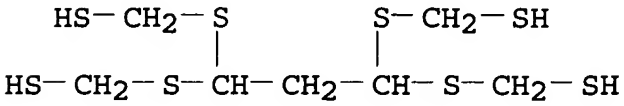
CM 1

CRN 597580-29-5
CMF C8 H14 S5



CM 2

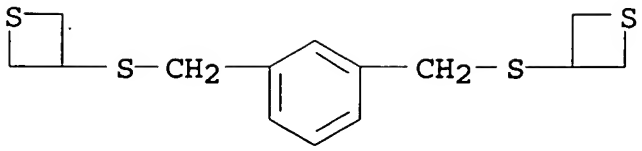
CRN 363138-81-2
CMF C7 H16 S8



RN 597580-48-8 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 3,3'-[1,3-phenylenebis(methylenethio)]bis[thietane] (9CI) (CA INDEX NAME)

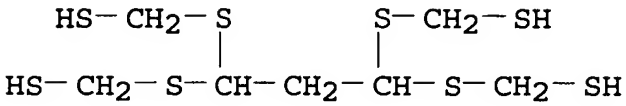
CM 1

CRN 597580-30-8
CMF C14 H18 S4



CM 2

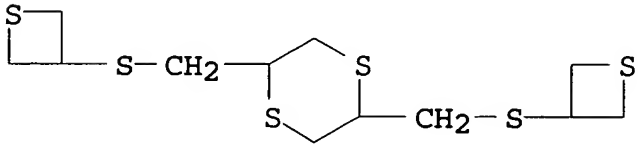
CRN 363138-81-2
CMF C7 H16 S8



RN 597580-49-9 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2,5-bis[(3-thietanylthio)methyl]-1,4-dithiane (9CI) (CA INDEX NAME)

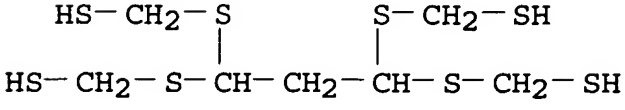
CM 1

CRN 597580-31-9
CMF C12 H20 S6



CM 2

CRN 363138-81-2
CMF C7 H16 S8

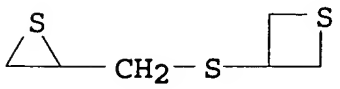


RN 597580-50-2 HCA

CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 3-[(thiiranylmethyl)thio]thietane (9CI) (CA INDEX NAME)

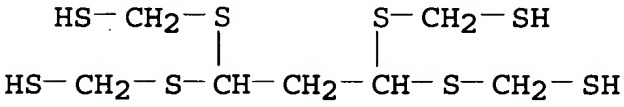
CM 1

CRN 597580-33-1
CMF C6 H10 S3



CM 2

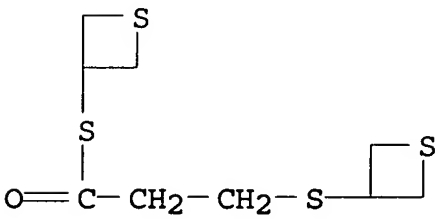
CRN 363138-81-2
CMF C7 H16 S8



RN 597580-53-5 HCA
CN Propanethioic acid, 3-(3-thietanylthio)-, S-3-thietanyl ester, polymer with [1,3-propanediylidenetetrakis(thio)]tetrakis[methanethiol] (9CI) (CA INDEX NAME)

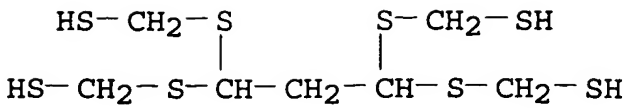
CM 1

CRN 597580-37-5
CMF C9 H14 O S4



CM 2

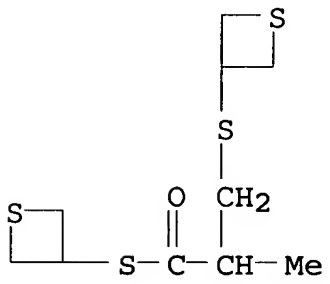
CRN 363138-81-2
CMF C7 H16 S8



RN 597580-54-6 HCA
CN Propanethioic acid, 2-methyl-3-(3-thietanylthio)-, S-3-thietanyl ester, polymer with [1,3-propanediylidenetetrakis(thio)]tetrakis[methanethiol] (9CI) (CA INDEX NAME)

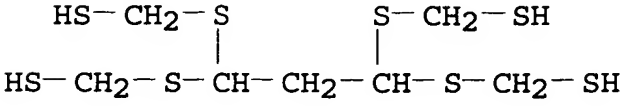
CM 1

CRN 597580-38-6
CMF C10 H16 O S4



CM 2

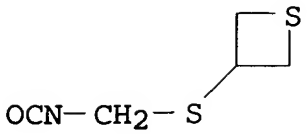
CRN 363138-81-2
CMF C7 H16 S8



RN 597580-56-8 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 3-[(isocyanatomethyl)thio]thietane (9CI) (CA INDEX NAME)

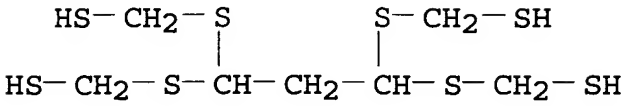
CM 1

CRN 597580-39-7
CMF C5 H7 N O S2



CM 2

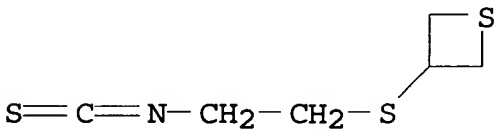
CRN 363138-81-2
CMF C7 H16 S8



RN 597580-57-9 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 3-[(2-isothiocyanatoethyl)thio]thietane (9CI) (CA INDEX NAME)

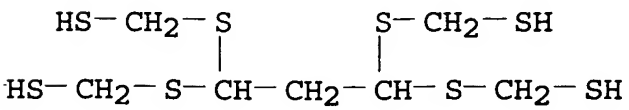
CM 1

CRN 597580-41-1
CMF C6 H9 N S3



CM 2

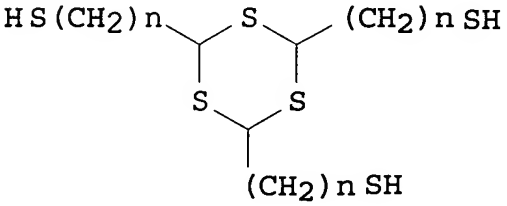
CRN 363138-81-2
CMF C7 H16 S8



IC ICM C08G075-00
ICS C07D331-04; C07D409-14; G02C007-02
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 35

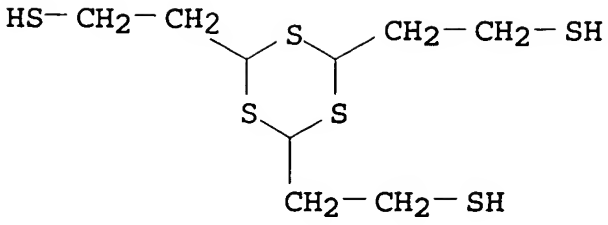
IT 597580-25-1P, 3-Mercaptothietane 597580-32-0P 597580-40-0P
597580-41-1P
(intermediate; prepn. of polymerizable compn. contg. novel cyclic sulfur compd. and resin obtained by curing the polymerizable compn.)
IT 597580-42-2P 597580-44-4P **597580-45-5P**
597580-46-6P 597580-47-7P 597580-48-8P
597580-49-9P 597580-50-2P 597580-51-3P
597580-52-4P **597580-53-5P 597580-54-6P**
597580-55-7P **597580-56-8P 597580-57-9P**
(prepn. of polymerizable compn. contg. novel cyclic sulfur compd. and resin obtained by curing the polymerizable compn.)

L26 ANSWER 5 OF 6 HCA COPYRIGHT 2006 ACS on STN
139:7842 Polymer optical materials obtained from thiol compounds. Okubo, Takeshi; Takamatsu, Takeshi (Hoya Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2003160631 A2 20030603, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-362378 20011128.
GI

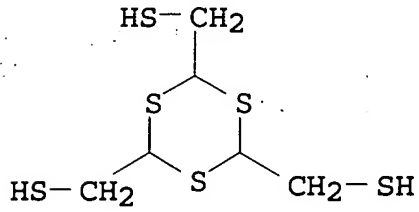


I

AB Title materials comprise polymers obtained from (A) thiols contg. .gtoreq.1 I (n = 1, 2) and (B) .gtoreq.1 compds. selected from (a) compds. having .gtoreq.2 vinyl groups, (b) compds. having .gtoreq.2 isocyanate groups and/or **isothiocyanate** groups, and (c) compds. having .gtoreq.1 vinyl groups and isocyanate groups and/or **isothiocyanate** groups. Thus, 2,4,6-tris(mercaptomethyl)-1,3,5-trithiane, xylene diisocyanate, and dibutyltin dilaurate were mixed and molded to give a lens showing n 1.71, Abbe no. 36, light transmittance 92%, and good heat resistance.
IT **4508-23-0P**, 1,3,5-Trithiane-2,4,6-triethanethiol
404871-87-0P, 1,3,5-Trithiane-2,4,6-trimethanethiol
(polymer optical materials with high refractive index and Abbe no. obtained from thiol compds.)
RN 4508-23-0 HCA
CN 1,3,5-Trithiane-2,4,6-triethanethiol (9CI) (CA INDEX NAME)



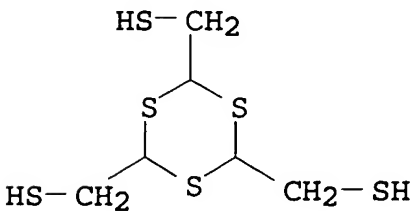
RN 404871-87-0 HCA
CN 1,3,5-Trithiane-2,4,6-trimethanethiol (9CI) (CA INDEX NAME)



IT **404871-96-1P 533932-15-9P**, 2,5-Bis(mercaptomethyl)-1,4-dithiane-1,5-diisocyanato-2,4-dithiapentane-2,4,6-tris(mercaptomethyl)-1,3,5-trithiane copolymer **533932-16-0P**, Divinylbenzene-1,2,3-trimercaptopropane-2,4,6-tris(mercaptoethyl)-1,3,5-trithiane copolymer **533932-17-1P** **533932-18-2P**, Bis(4-isocyanatocyclohexyl)methane-1,3-bis(isocyanatomethyl)cyclohexane-dimercaptomethane-2,4,6-tris(mercaptomethyl)-1,3,5-trithiane copolymer
(polymer optical materials with high refractive index and Abbe no. obtained from thiol compds.)
RN 404871-96-1 HCA
CN 1,3,5-Trithiane-2,4,6-trimethanethiol, polymer with 1,3-bis(isocyanatomethyl)benzene (9CI) (CA INDEX NAME)

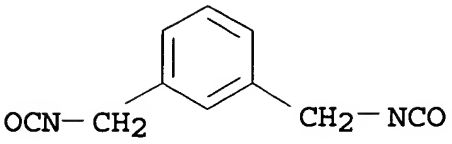
CM 1

CRN 404871-87-0
CMF C6 H12 S6



CM 2

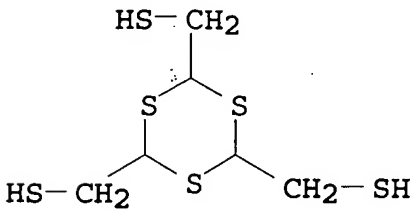
CRN 3634-83-1
CMF C10 H8 N2 O2



RN 533932-15-9 HCA
CN 1,3,5-Trithiane-2,4,6-trimethanethiol, polymer with bis[(isocyanatomethyl)thio]methane and 1,4-dithiane-2,5-dimethanethiol (9CI) (CA INDEX NAME)

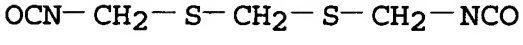
CM 1

CRN 404871-87-0
CMF C6 H12 S6



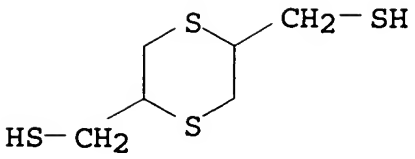
CM 2

CRN 149683-01-2
CMF C5 H6 N2 O2 S2



CM 3

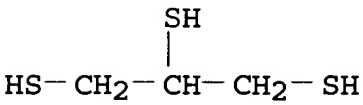
CRN 136122-15-1
CMF C6 H12 S4



RN 533932-16-0 HCA
CN 1,3,5-Trithiane-2,4,6-triethanethiol, polymer with diethenylbenzene and 1,2,3-propanetrithiol (9CI) (CA INDEX NAME)

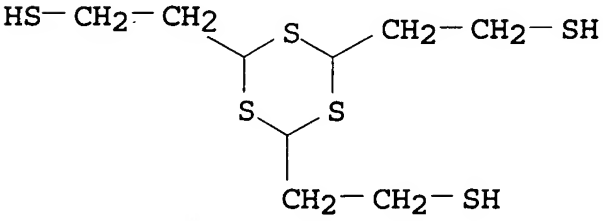
CM 1

CRN 4756-13-2
CMF C3 H8 S3



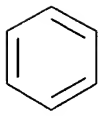
CM 2

CRN 4508-23-0
CMF C9 H18 S6



CM 3

CRN 1321-74-0
CMF C10 H10
CCI IDS

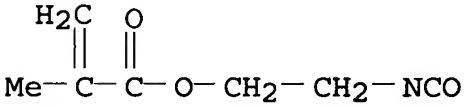


2 [D1—CH═CH$_2$]

RN 533932-17-1 HCA
CN 2-Propenoic acid, 2-methyl-, 2-isocyanatoethyl ester, polymer with 1,3,5-trithiane-2,4,6-triethanethiol (9CI) (CA INDEX NAME)

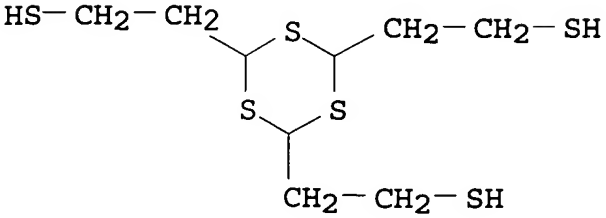
CM 1

CRN 30674-80-7
CMF C7 H9 N O3



CM 2

CRN 4508-23-0
CMF C9 H18 S6

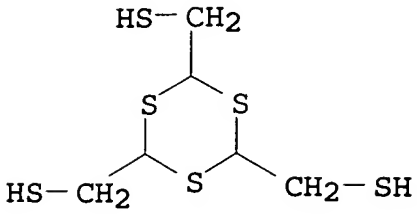


RN 533932-18-2 HCA
CN 1,3,5-Trithiane-2,4,6-trimethanethiol, polymer with 1,3-bis(isocyanatomethyl)cyclohexane, methanedithiol and 1,1'-methylenebis[4-isocyanatocyclohexane] (9CI) (CA INDEX NAME)

CM 1

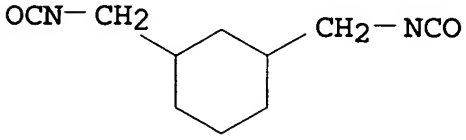
CRN 404871-87-0

CMF C6 H12 S6



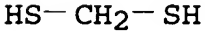
CM 2

CRN 38661-72-2
CMF C10 H14 N2 O2



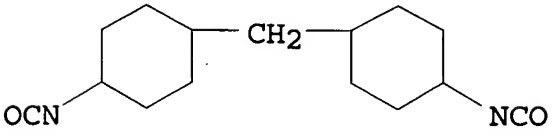
CM 3

CRN 6725-64-0
CMF C H4 S2



CM 4

CRN 5124-30-1
CMF C15 H22 N2 O2



IC ICM C08G018-38
ICS C08G018-32; C08G075-04; C08G075-08; G02B001-04; G02C007-02
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 73
IT **4508-23-0P**, 1,3,5-Trithiane-2,4,6-triethanethiol

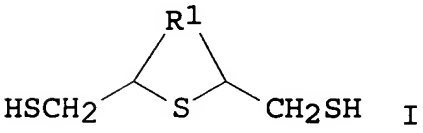
404871-87-0P, 1,3,5-Trithiane-2,4,6-trimethanethiol
(polymer optical materials with high refractive index and Abbe no. obtained from thiol compds.)

IT **404871-96-1P 533932-15-9P**, 2,5-Bis(mercaptomethyl)-1,4-dithiane-1,5-diisocyanato-2,4-dithiapentane-2,4,6-tris(mercaptomethyl)-1,3,5-trithiane copolymer **533932-16-0P**, Divinylbenzene-1,2,3-trimercaptopropane-2,4,6-tris(mercaptoethyl)-1,3,5-trithiane copolymer **533932-17-1P** **533932-18-2P**, Bis(4-isocyanatocyclohexyl)methane-1,3-bis(isocyanatomethyl)cyclohexane-dimercaptomethane-2,4,6-tris(mercaptomethyl)-1,3,5-trithiane copolymer
(polymer optical materials with high refractive index and Abbe no. obtained from thiol compds.)

L26 ANSWER 6 OF 6 HCA COPYRIGHT 2006 ACS on STN

120:193224 Cyclic sulfide compounds and polymerizable compositions for optical products and optical products formed therefrom. Kanesaki, Hiroyuki; Saika, Tetsuyuki; Mikami, Masafumi (Daiso Co., Ltd., Japan). Eur. Pat. Appl. EP 562966 A2 19930929, 19 pp. DESIGNATED STATES: R: BE, DE, ES, FR, GB, IE, IT. (English). CODEN: EPXXDW. APPLICATION: EP 1993-400770 19930324. PRIORITY: JP 1992-65525 19920324.

GI



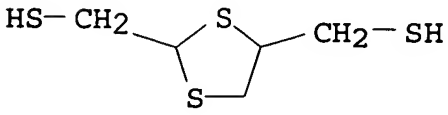
I

ie., a diisothiocyanate

AB Title compds. I [R1 = CH2CH2, (CH2)3, CH2OCH2, CH2O, or CH2S] are manufd. and polymd. with X1n1R2X2n2 (II, X1, X2 = NCO, **NCS**, CH2:CR3CO2, CH2:CR4, R2 = C2-25 org., R3, R4 = H or Me, n1, n2 = 1-5) or with II and Y1m1R6Y2m2 (Y1, Y2 = SH or OH, R6 = C2-25 org., m1, m2 = 1-5) excluding I to give products with high refractive indexes and Abbe nos. and good optical uniformity, processability, and thermal, impact, and light resistance. Thus, reaction of 1,5-hexadiene with SCl2, reaction of the resulting 2,5-bis(chloromethyl)tetrahydrothiophene with thiourea, and hydrolysis of the resulting isothiuronium salt gave I (R1 = CH2CH2) (III). Polymn. of III with 1,3-bis(isocyanatomethyl)cyclohexane gave a impact- and light-resistant polymer with refractive index 1.61, Abbe no. 40, and thermomech. and Vicat softening points 104 and 95.degree., resp.

IT **153729-29-4P**, 1,3-Dithiolane-2,4-dimethanethiol
(manuf. of, for polymn. with isocyanates and vinyl compds.)

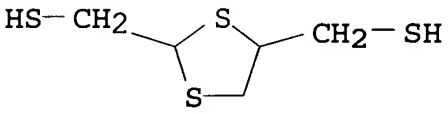
RN 153729-29-4 HCA
CN 1,3-Dithiolane-2,4-dimethanethiol (9CI) (CA INDEX NAME)



IT **153729-36-3P 153729-41-0P 153729-46-5P**
153729-47-6P
(manuf. of, with high refractive index and Abbe no., for optical materials)
RN 153729-36-3 HCA
CN 1,3-Dithiolane-2,4-dimethanethiol, polymer with 1,6-diisocyanatohexane (9CI) (CA INDEX NAME)

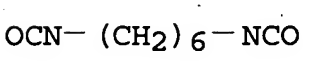
CM 1

CRN 153729-29-4
CMF C5 H10 S4



CM 2

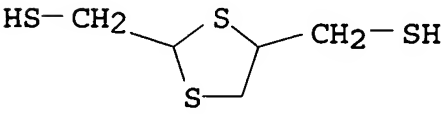
CRN 822-06-0
CMF C8 H12 N2 O2



RN 153729-41-0 HCA
CN 1,3-Dithiolane-2,4-dimethanethiol, polymer with 1,3-bis(isocyanatomethyl)benzene (9CI) (CA INDEX NAME)

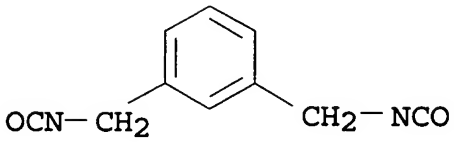
CM 1

CRN 153729-29-4
CMF C5 H10 S4



CM 2

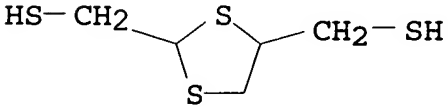
CRN 3634-83-1
CMF C10 H8 N2 O2



RN 153729-46-5 HCA
CN 2-Propenoic acid, 2-methyl-, 2-isocyanatoethyl ester, polymer with 1,3-bis(isocyanatomethyl)cyclohexane and 1,3-dithiolane-2,4-dimethanethiol (9CI) (CA INDEX NAME)

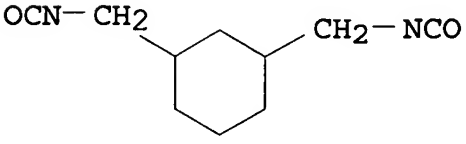
CM 1

CRN 153729-29-4
CMF C5 H10 S4



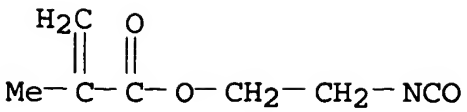
CM 2

CRN 38661-72-2
CMF C10 H14 N2 O2



CM 3

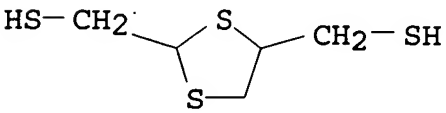
CRN 30674-80-7
CMF C7 H9 N O3



RN 153729-47-6 HCA
CN 2-Propenoic acid, 2-methyl-, 1,2-ethanediyl ester, polymer with 1,3-dithiolane-2,4-dimethanethiol (9CI) (CA INDEX NAME)

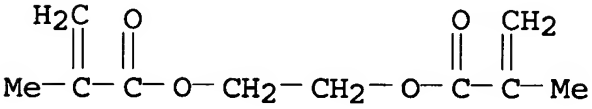
CM 1

CRN 153729-29-4
CMF C5 H10 S4



CM 2

CRN 97-90-5
CMF C10 H14 O4



IC ICM C07D339-06
ICS C07D327-06; C07D333-18; C07D335-02; C07D327-04; G02B001-04; C08G075-04; C08G018-38
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 27, 38, 73
IT 153729-26-1P, 3,5-Bis(mercaptomethyl)-1,4-oxathiane
153729-29-4P, 1,3-Dithiolane-2,4-dimethanethiol
153729-30-7P, 2,5-Bis(mercaptomethyl)tetrahydrothiophene
(manuf. of, for polymn. with isocyanates and vinyl compds.)
IT 153729-31-8P 153729-32-9P 153729-33-0P 153729-35-2P
153729-36-3P 153729-37-4P 153729-38-5P 153729-39-6P
153729-40-9P **153729-41-0P** 153729-42-1P 153729-43-2P
153729-44-3P 153729-45-4P **153729-46-5P**
153729-47-6P 153966-24-6P 153966-27-9P
(manuf. of, with high refractive index and Abbe no., for optical materials)

(DOESN'T NECESSARILY CONTAIN THE ISOTHIOCYANATE COMPONENT THAT WAS RECITED.)

=> d 128 1-31 cbib abs hitstr hitind

L28 ANSWER 1 OF 31 HCA COPYRIGHT 2006 ACS on STN
144:129994 Thietanes and their manufacture, polymerizable compositions, and polymers for transparent high-**refractive** index optical materials with high Abbe number. Morishiri, Hiroyuki; Yamamoto, Hideo; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2006008557 A2 20060112, 41 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2004-186064 20040624.

AB Thietanes having 2-4 disulfide bonds and 2-4 thietanyl groups are manufd. from bis(3-thietanyl) disulfide (I) and polythiols. Thus, I was reacted with bis(mercaptomethyl) sulfide to give 1,4-bis(3-thietanyldithio)-2,3-dithiabutane, which was mixed with UV absorber and polymd. in a mold to give transparent lenses, showing **refractive** index ne 1.79 and Abbe no. .nu.e = 29.

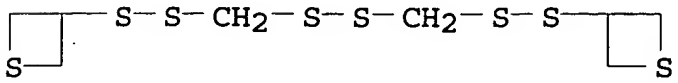
IT **873190-25-1P 873190-26-2P 873190-27-3P**
873190-28-4P 873190-29-5P 873190-30-8P
(manuf. of polythietanes and their polymers for transparent high-**refractive** index optical materials with high Abbe no.)

RN 873190-25-1 HCA

CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with 3,3'-[dithiobis(methylenedithio)]bis[thietane] (9CI) (CA INDEX NAME)

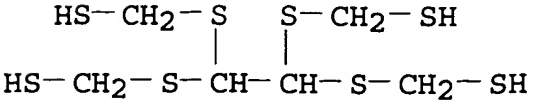
CM 1

CRN 873190-15-9
CMF C8 H14 S8



CM 2

CRN 363138-82-3
CMF C6 H14 S8



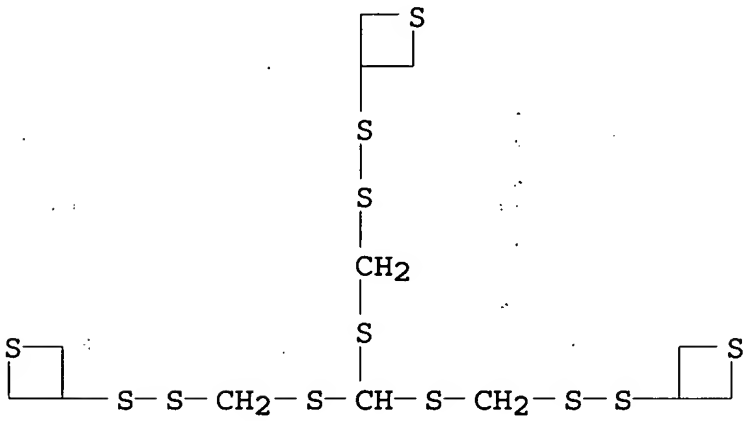
RN 873190-26-2 HCA

CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer

with 3,3',3''-[methylidynetris(thiomethylenedithio)]tris[thietane] (9CI) (CA INDEX NAME)

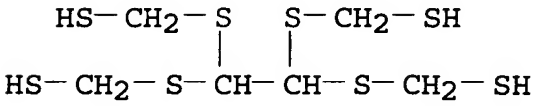
CM 1

CRN 873190-16-0
CMF C13 H22 S12



CM 2

CRN 363138-82-3
CMF C6 H14 S8

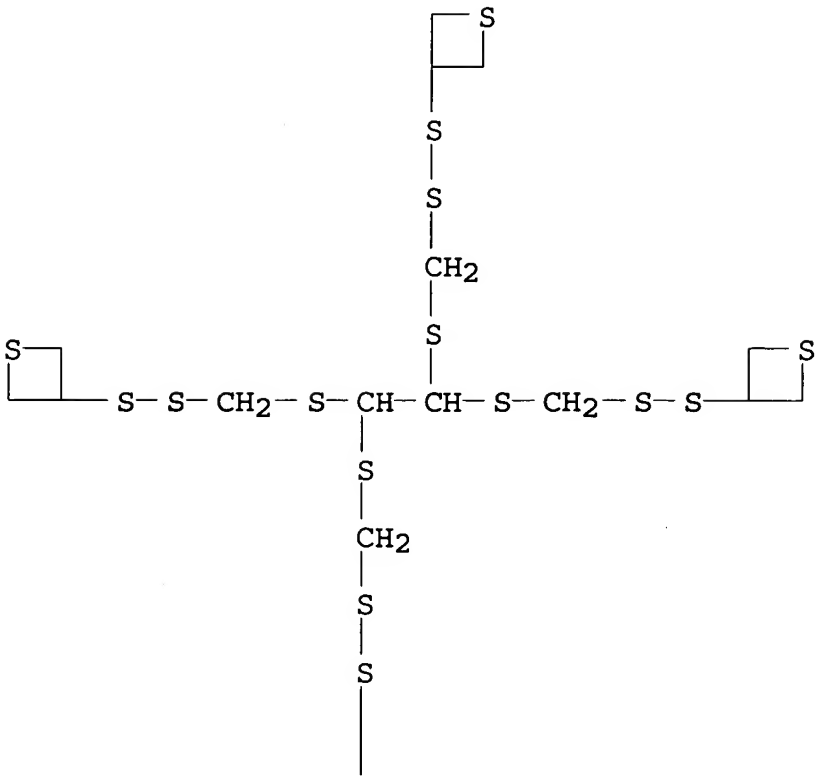


RN 873190-27-3 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with 3,3',3'',3'''-[1,2-ethanediylidenetetrakis(thiomethylenedithio)]tetrakis[thietane] (9CI) (CA INDEX NAME)

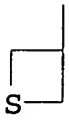
CM 1

CRN 873190-17-1
CMF C18 H30 S16

PAGE 1-A

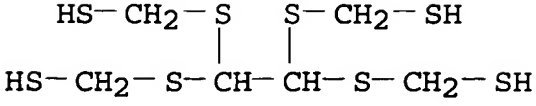


PAGE 2-A



CM 2

CRN 363138-82-3
CMF C6 H14 S8

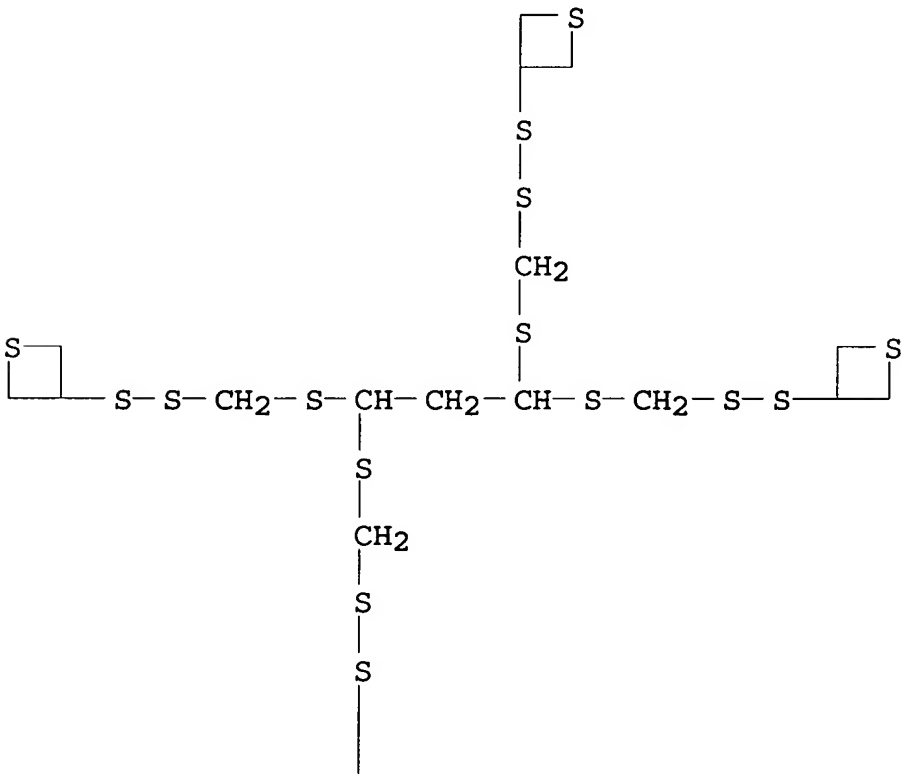


RN 873190-28-4 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with 3,3',3'',3'''-[1,3-propanediylidenetetrakis(thiomethylenedithio)]tetrakis[thietane] (9CI) (CA INDEX NAME)

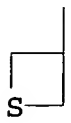
CM 1

CRN 873190-18-2
CMF C19 H32 S16

PAGE 1-A

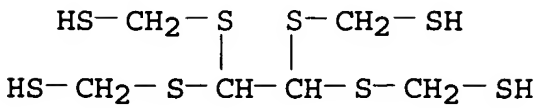


PAGE 2-A



CM 2

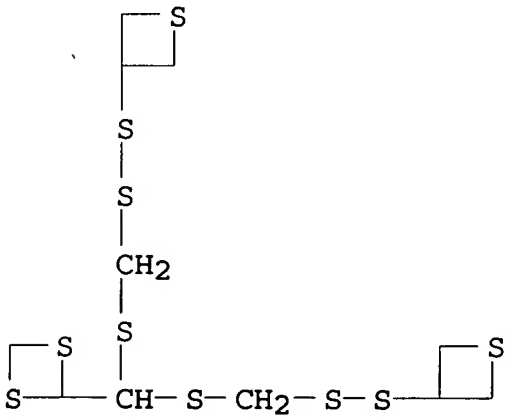
CRN 363138-82-3
CMF C6 H14 S8



RN 873190-29-5 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with 2-[bis[[(3-thietanyldithio)methyl]thio]methyl]-1,3-dithietane (9CI) (CA INDEX NAME)

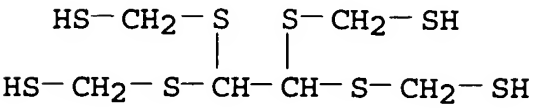
CM 1

CRN 873190-19-3
CMF C11 H18 S10



CM 2

CRN 363138-82-3
CMF C6 H14 S8



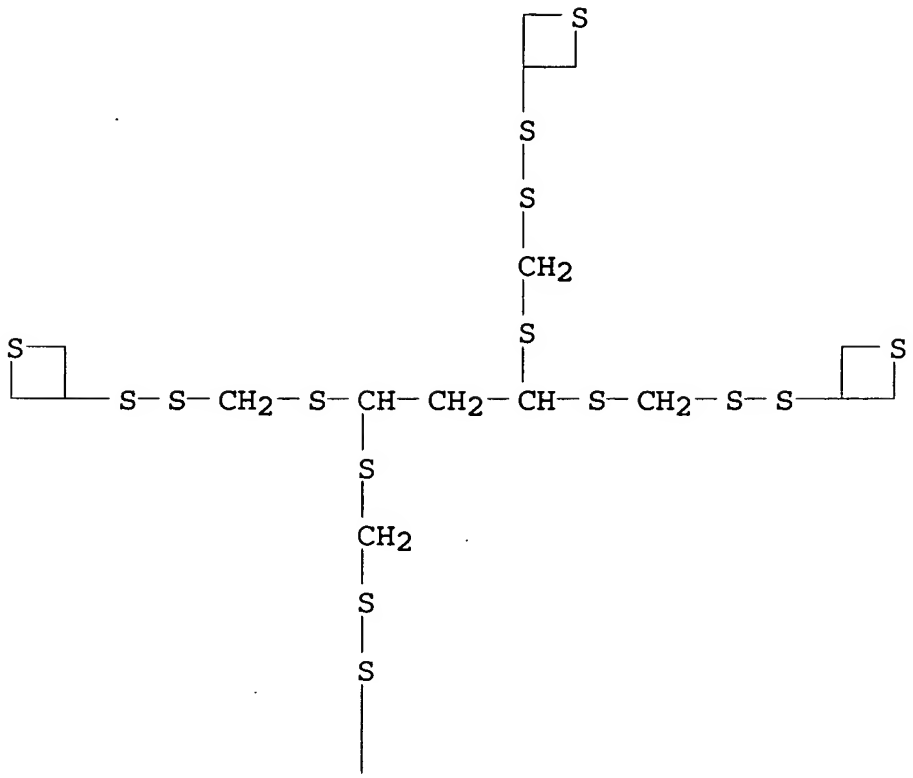
RN 873190-30-8 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with 3,3',3'',3'''-[1,3-propanediylidenetetrakis(thiomethylenedithio

)]tetrakis[thietane] and sulfur (9CI) (CA INDEX NAME)

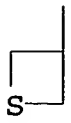
CM 1

CRN 873190-18-2
CMF C19 H32 S16

PAGE 1-A



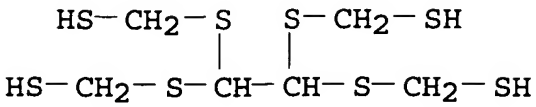
PAGE 2-A



CM 2

CRN 363138-82-3

CMF C6 H14 S8



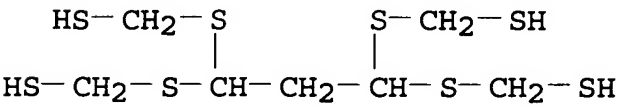
CM 3

CRN 7704-34-9
CMF S

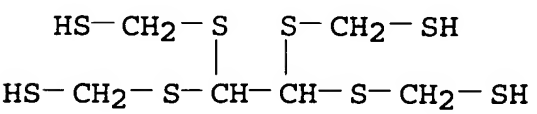
S

IT **363138-81-2**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane
363138-82-3, 1,1,2,2-Tetrakis(mercaptomethylthio)ethane
568565-57-1, 1,1,1-Tris(mercaptomethylthio)methane
574615-93-3, 2-[1,1-Bis(mercaptomethylthio)methyl]-1,3-dithiethane
(manuf. of polythietanes and their polymers for transparent high-**refractive** index optical materials with high Abbe no.)

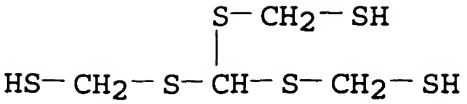
RN 363138-81-2 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis- (9CI) (CA INDEX NAME)



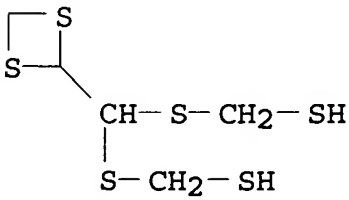
RN 363138-82-3 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis- (9CI) (CA INDEX NAME)



RN 568565-57-1 HCA
CN Methanethiol, 1,1',1''-[methylidynetris(thio)]tris- (9CI) (CA INDEX NAME)



RN 574615-93-3 HCA
CN Methanethiol, [(1,3-dithietan-2-ylmethylene)bis(thio)]bis- (9CI) (CA INDEX NAME)



CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 27, 35, 73
IT Alkali metal hydroxides
(aq., washing solvents; manuf. of polythietanes and their polymers for transparent high-**refractive** index optical materials with high Abbe no.)
IT Lenses
Optical materials
Transparent materials
(manuf. of polythietanes and their polymers for transparent high-**refractive** index optical materials with high Abbe no.)
IT Polythioethers
(polysulfide-; manuf. of polythietanes and their polymers for transparent high-**refractive** index optical materials with high Abbe no.)
IT Polysulfides
(polythioether-; manuf. of polythietanes and their polymers for transparent high-**refractive** index optical materials with high Abbe no.)
IT Alcohols, uses
(washing solvents; manuf. of polythietanes and their polymers for transparent high-**refractive** index optical materials with high Abbe no.)
IT 1310-73-2, Sodium hydroxide, uses
(aq., washing solvent; manuf. of polythietanes and their polymers for transparent high-**refractive** index optical materials with high Abbe no.)
IT 873190-15-9P 873190-16-0P 873190-17-1P 873190-18-2P 873190-19-3P
(manuf. of polythietanes and their polymers for transparent high-

refractive index optical materials with high Abbe no.)

IT 873190-20-6P 873190-21-7P 873190-22-8P 873190-23-9P
873190-24-0P **873190-25-1P 873190-26-2P**
873190-27-3P 873190-28-4P 873190-29-5P
873190-30-8P
(manuf. of polythietanes and their polymers for transparent high-**refractive** index optical materials with high Abbe no.)

IT 7529-06-8, Bis(mercaptomethyl) sulfide **363138-81-2**,
1,1,3,3-Tetrakis(mercaptomethylthio)propane **363138-82-3**,
1,1,2,2-Tetrakis(mercaptomethylthio)ethane **568565-57-1**,
1,1,1-Tris(mercaptomethylthio)methane **574615-93-3**,
2-[1,1-Bis(mercaptomethylthio)methyl]-1,3-dithiethane 597580-27-3
(manuf. of polythietanes and their polymers for transparent high-**refractive** index optical materials with high Abbe no.)

IT 67-63-0, Isopropyl alcohol, uses
(washing solvent; manuf. of polythietanes and their polymers for transparent high-**refractive** index optical materials with high Abbe no.)

L28 ANSWER 2 OF 31 HCA COPYRIGHT 2006 ACS on STN
144:89123 Sulfur-containing polymerizable compositions, optical materials, and plastic lenses. Morishiri, Hiroyuki; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2006001982 A2 20060105, 26 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2004-177690 20040616.

AB Title compns., curable at 80.degree. in air for .ltoreq.30 h, comprise (A) 60-95 parts of .gtoreq.1 compds. having .gtoreq.2 episulfide groups and 5-40 parts mixts. of (B) .gtoreq.1 compds. having .gtoreq.1 SH groups, and (C) .gtoreq.1 episulfide-free compds. crosslinkable with B in air. Thus, a compn. contg. 1,1,3,3-tetrakis(2,3-epithiopropyldithiomethylthio)propane, 1,1,3,3-tetrakis(mercaptomethylthio)propane, divinyl sulfide, UV absorber, and N,N-dimethylcyclohexylamine was injected into a mold and heated to give a lens showing n 1.76, Abbe no. 31, glass transition temp. 99.degree., and good curability.

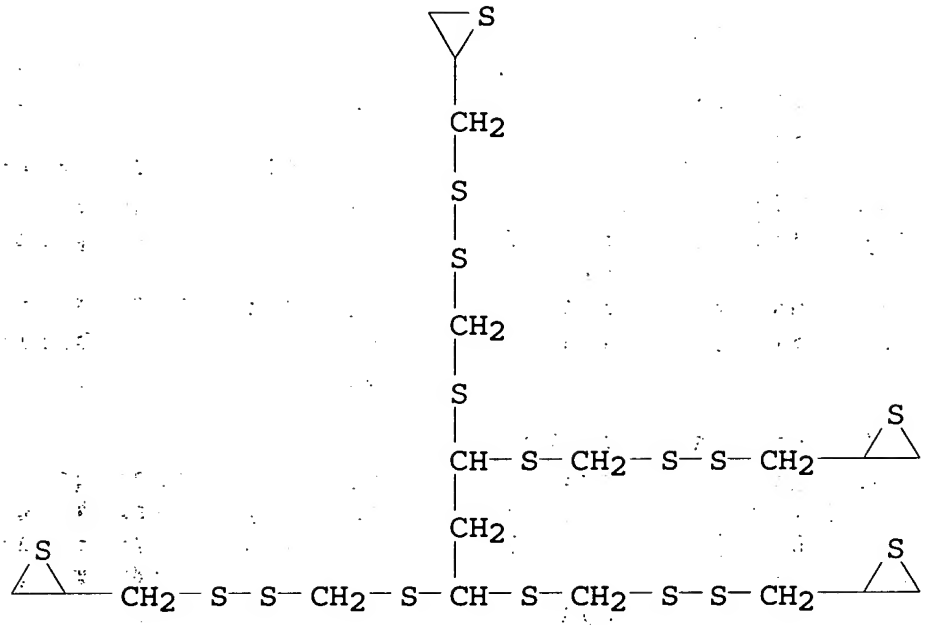
IT **870074-48-9P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane-m-xylylene diisocyanate copolymer **872409-34-2P**, Divinyl sulfide-1,1,3,3-tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer
(episulfide-contg. polymerizable compns. for lenses with good air curability and high **refractive** index)

RN 870074-48-9 HCA

CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 1,3-bis(isocyanatomethyl)benzene and 2,2',2'',2'''-[1,3-propanediylidenetetrakis(thiomethylenedithiomethylene)]tetrakis[thiirane] (9CI) (CA INDEX NAME)

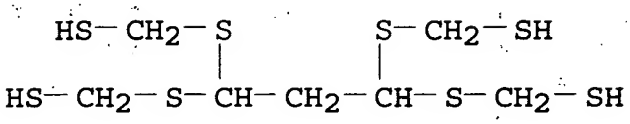
CM 1

CRN 869725-92-8
CMF C19 H32 S16



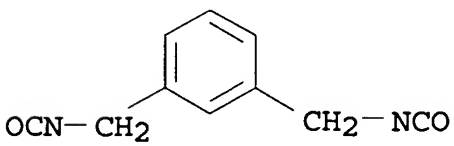
CM 2

CRN 363138-81-2
CMF C7 H16 S8



CM 3

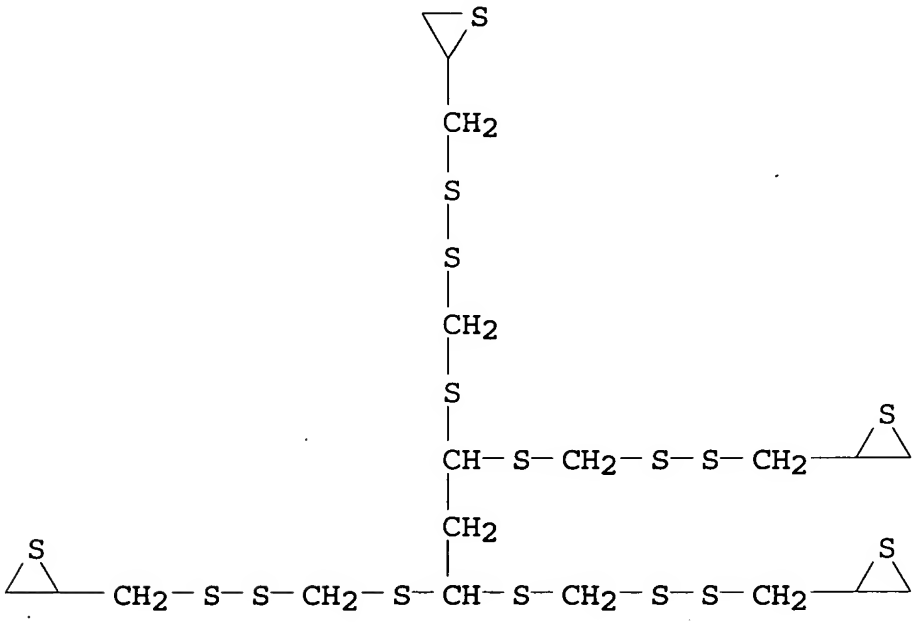
CRN 3634-83-1
CMF C10 H8 N2 O2



RN 872409-34-2 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2,2',2'',2'''-[1,3-propanediylidenetetrakis(thiomethylenedithio methylene)]tetrakis[thiirane] and 1,1'-thiobis[ethene] (9CI) (CA INDEX NAME)

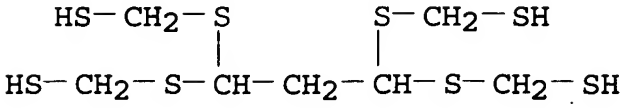
CM 1

CRN 869725-92-8
CMF C19 H32 S16



CM 2

CRN 363138-81-2
CMF C7 H16 S8



CM 3

CRN 627-51-0
CMF C4 H6 S

$H_2C{=}CH{-}S{-}CH{=}CH_2$

CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 73
ST episulfide polymer optical material **refractive** index; lens episulfide polymer air curability; Abbe number episulfide polymer eyeglass lens
IT Eyeglass lenses
Optical materials
Transparent materials
(episulfide-contg. polymerizable compns. for lenses with good air curability and high **refractive** index)
IT Polythioethers
(polysulfide-polythiourethane-thioepoxy; episulfide-contg. polymerizable compns. for lenses with good air curability and high **refractive** index)
IT Polythioethers
(polysulfide-thioepoxy; episulfide-contg. polymerizable compns. for lenses with good air curability and high **refractive** index)
IT Polysulfides
(polythioether-polythiourethane-thioepoxy; episulfide-contg. polymerizable compns. for lenses with good air curability and high **refractive** index)
IT Polysulfides
(polythioether-thioepoxy; episulfide-contg. polymerizable compns. for lenses with good air curability and high **refractive** index)
IT Epoxy resins, preparation
(thio-, polysulfide-polythioether-; episulfide-contg. polymerizable compns. for lenses with good air curability and high **refractive** index)
IT Epoxy resins, preparation
(thio-, polysulfide-polythioether-polythiourethane-; episulfide-contg. polymerizable compns. for lenses with good air curability and high **refractive** index)
IT Polyurethanes, preparation
(thio-, polysulfide-polythioether-thioepoxy; episulfide-contg. polymerizable compns. for lenses with good air curability and high **refractive** index)
IT **870074-48-9P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane-m-xylylene diisocyanate copolymer **872409-34-2P**, Divinyl sulfide-1,1,3,3-tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer

(episulfide-contg. polymerizable compns. for lenses with good air curability and high **refractive** index)

L28 ANSWER 3 OF 31 HCA COPYRIGHT 2006 ACS on STN
144:77729 Optical materials comprising episulfide-type sulfur-containing polymers with excellent surface hardness and coatability and plastic lenses using them. Morijiri, Hiroyuki; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2006003624 A2 20060105, 26 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2004-179865 20040617.

AB The polymers show surface hardness .gtoreq.2H and preferably **refractive** index .gtoreq.1.60, thus giving lenses with high Abbe no. and good scratch resistance without back side coating.

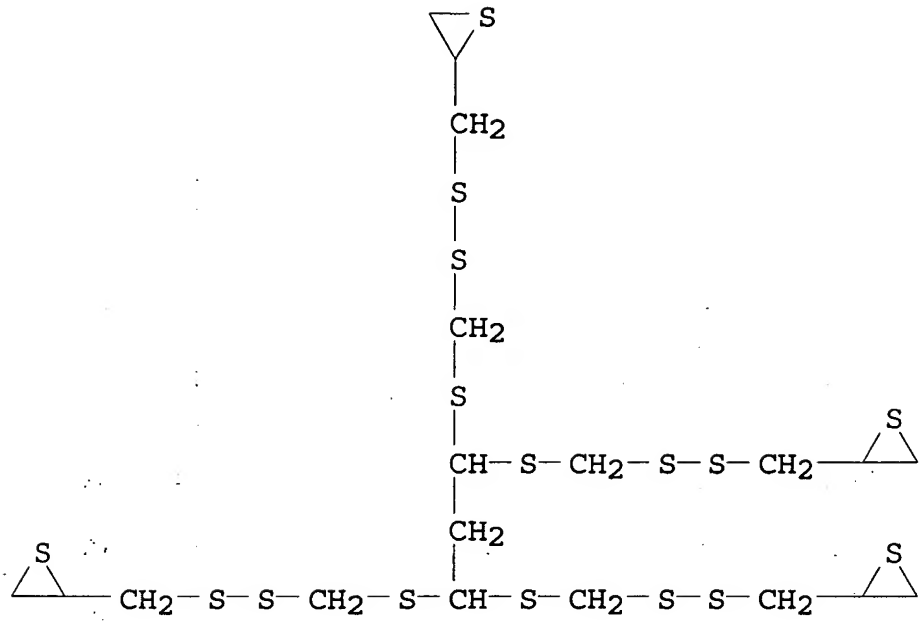
IT **870074-48-9P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane-m-xylylene diisocyanate copolymer
(optical materials of episulfide-type S-contg. polymers with good surface hardness and coatability for plastic lenses)

RN 870074-48-9 HCA

CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 1,3-bis(isocyanatomethyl)benzene and 2,2',2'',2'''-[1,3-propanediylidenetetrakis(thiomethylenedithiomethylene)]tetrakis[thiirane] (9CI) (CA INDEX NAME)

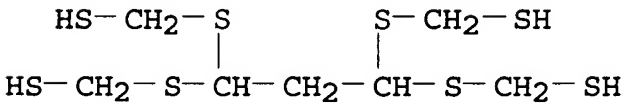
CM 1

CRN 869725-92-8
CMF C19 H32 S16



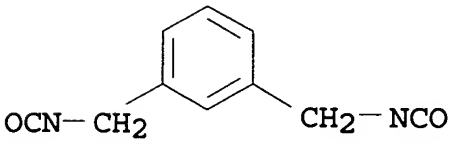
CM 2

CRN 363138-81-2
CMF C7 H16 S8



CM 3

CRN 3634-83-1
CMF C10 H8 N2 O2

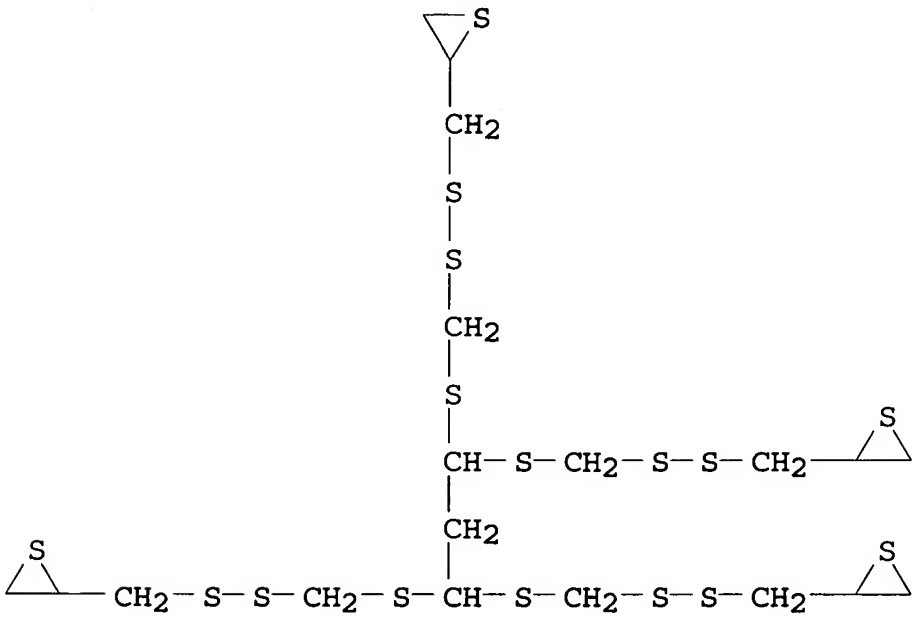


IT **870074-47-8P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer
(optical materials of episulfide-type S-contg. polymers with good

surface hardness and coatability for plastic lenses)
RN 870074-47-8 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2,2',2'',2'''-[1,3-propanediylidenetetrakis(thiomethylenedithio methylene)]tetrakis[thiirane] (9CI) (CA INDEX NAME)

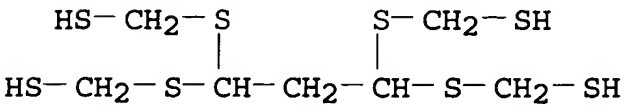
CM 1

CRN 869725-92-8
CMF C19 H32 S16



CM 2

CRN 363138-81-2
CMF C7 H16 S8



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 38
ST optical material episulfide polymer surface hardness; polysulfide polythiourethane plastic lens hard coating; mercaptothiopropane sulfur polymn lens **refractive** index

IT **870074-48-9P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane-m-xylylene diisocyanate copolymer
(optical materials of episulfide-type S-contg. polymers with good surface hardness and coatability for plastic lenses)

IT **870074-47-8P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer
(optical materials of episulfide-type S-contg. polymers with good surface hardness and coatability for plastic lenses)

L28 ANSWER 4 OF 31 HCA COPYRIGHT 2006 ACS on STN

144:70522 Episulfide-containing polymer optical materials with high **refractive** index and good mechanical strength, and eyeglasses lenses therefrom. Morishiri, Hiroyuki; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2005350531 A2 20051222, 27 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2004-170883 20040609.

AB Title polymers, contg. >1 Episulfide groups, were polymd. >40.degree., and released from mold <70.degree., losing the fluidity <40.degree.. Thus, 270 g 1,1,3,3-tetrakis(2,3-epithiopropyldithiomethylthio)propane, 30.0 g 1,1,3,3-tetrakis(mercaptomethylthio)propan,Viosorb 583, and N,N-dimethylcyclohexylamine were mixed, fed into a mold, and polymd. to give transparent test pieces showing **refractive** index (ne) 1.77, Abbe no. (.nu.e) 30, heat-resistance 109.degree., good transparency, good retention of bending strength after virtual processing, and no optical strain.

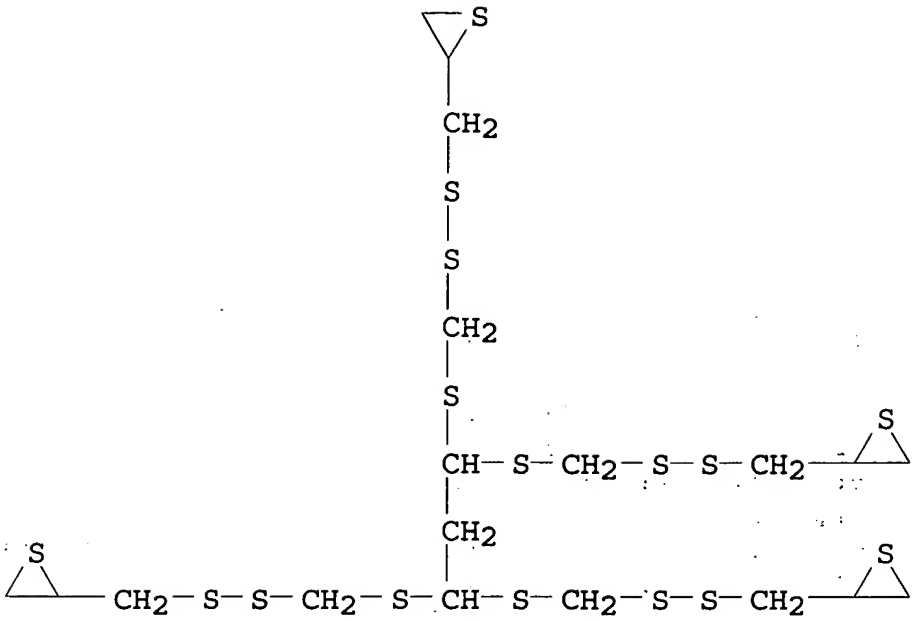
IT **870074-47-8P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer **870074-48-9P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-Tetr akis(mercaptomethylthio)propane-m-xylylene diisocyanate copolymer
(episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength, and plastic lenses therefrom)

RN 870074-47-8 HCA

CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2,2',2'',2'''-[1,3-propanediylidenetetrakis(thiomethylenedithio methylene)]tetrakis[thiirane] (9CI) (CA INDEX NAME)

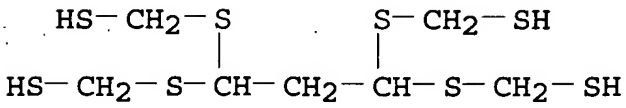
CM 1

CRN 869725-92-8
CMF C19 H32 S16



CM 2

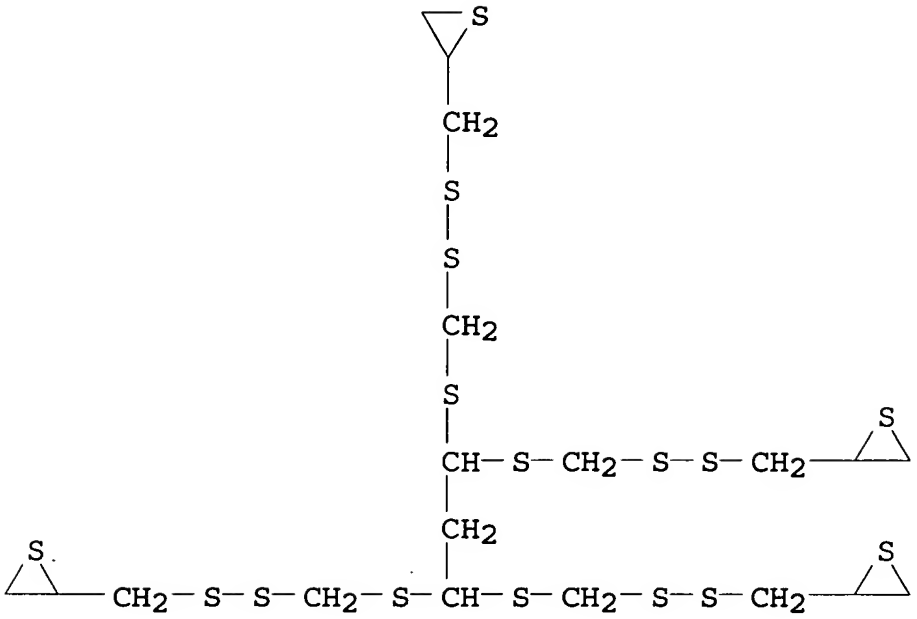
CRN 363138-81-2
CMF C7 H16 S8



RN 870074-48-9 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 1,3-bis(isocyanatomethyl)benzene and 2,2',2'',2'''-[1,3-propanediylidenetetrakis(thiomethylenedithiomethylene)]tetrakis[thiirane] (9CI) (CA INDEX NAME)

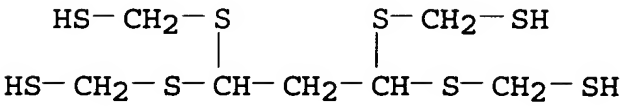
CM 1

CRN 869725-92-8
CMF C19 H32 S16



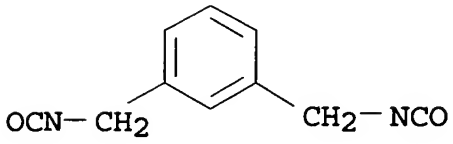
CM 2

CRN 363138-81-2
CMF C7 H16 S8



CM 3

CRN 3634-83-1
CMF C10 H8 N2 O2



IC ICM C08G075-06
ICS B29C039-02; C08G018-38; G02B001-04; B29K081-00; B29L011-00
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 73

IT Crosslinking catalysts
Eyeglass lenses
Heat-resistant materials
Optical materials
(episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength, and plastic lenses therefrom)

IT Epoxy resins, preparation
(episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength, and plastic lenses therefrom)

IT Polymers, uses
(episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength, and plastic lenses therefrom)

IT Polythioethers
(polysulfide-thioepoxy; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength, and plastic lenses therefrom)

IT Polysulfides
(polythioether-thioepoxy; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength, and plastic lenses therefrom)

IT Epoxy resins, preparation
(thio-, polysulfide-polythioether-; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength, and plastic lenses therefrom)

IT Polyurethanes, uses
(thio-; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength, and plastic lenses therefrom)

IT 3147-75-9, Viosorb 583
(UV absorbent; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength, and plastic lenses therefrom)

IT 98-94-2, N,N-Dimethylcyclohexylamine 13293-57-7, Dimethyl tin diacetate
(curing catalyst; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength, and plastic lenses therefrom)

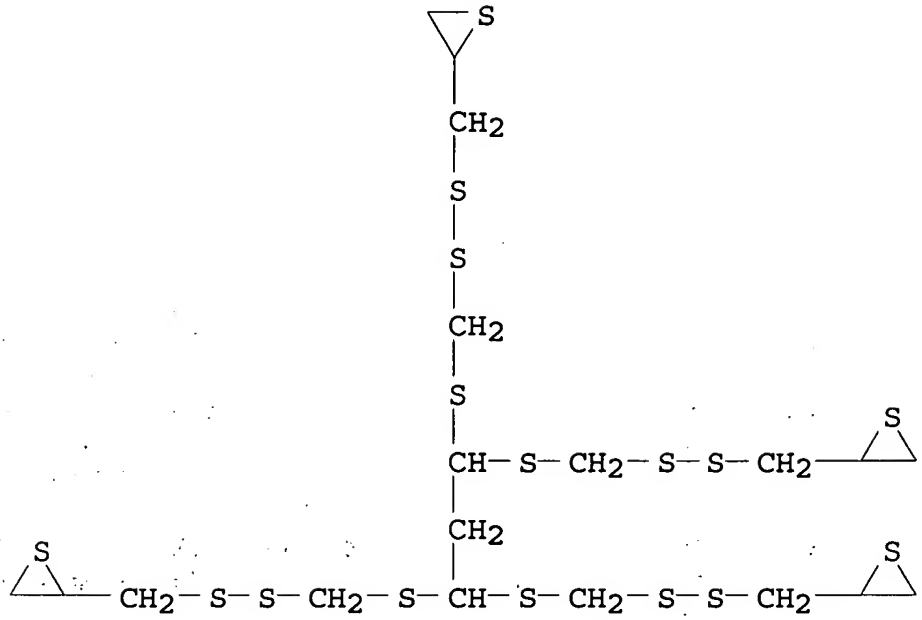
IT **870074-47-8P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer **870074-48-9P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-Tetr akis(mercaptomethylthio)propane-m-xylylene diisocyanate copolymer
(episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength, and plastic

lenses therefrom)
IT 7704-34-9, Sulfur, uses
(episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength, and plastic lenses therefrom)
IT 3115-68-2, Tetra-n-butyl phosphonium bromide
(internal mold release agent; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength, and plastic lenses therefrom)

L28 ANSWER 5 OF 31 HCA COPYRIGHT 2006 ACS on STN
144:23550 Episulfide-containing polymer optical materials with high **refractive** index and good mechanical strength, and plastic lenses comprising them. Morishiri, Hiroyuki; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2005336248 A2 20051208, 24 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2004-154466 20040525.
AB The optical materials comprise episulfide-contg. polymers with water absorption (JIS K 7209, 25.degree., 24 h) <0.01%. The plastic lenses are useful for eyeglasses, etc. Thus, 270 g 1,1,3,3-tetrakis(2,3-epithiopropyldithiomethylthio)propane, 30.0 g 1,1,3,3-tetrakis(mercaptomethylthio)propane, a UV absorber, and N,N-dimethylcyclohexylamine were mixed, fed into a mold, and polymd. to give transparent test pieces showing **refractive** index (ne) 1.77, Abbe no. (.nu.e) 30, water absorption 0.006%, and good retention of bending strength after virtual processing (soaking in water at 90.degree. for 10 min, drying, heating at 120.degree. for 3 h).
IT **870074-47-8P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer **870074-48-9P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane-m-xylylene diisocyanate copolymer
(episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength for plastic lenses)
RN 870074-47-8 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2,2',2'',2'''-[1,3-propanediylidenetetrakis(thiomethylenedithio methylene)]tetrakis[thiirane] (9CI) (CA INDEX NAME)

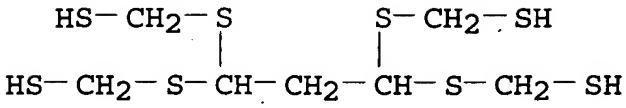
CM 1

CRN 869725-92-8
CMF C19 H32 S16



CM 2

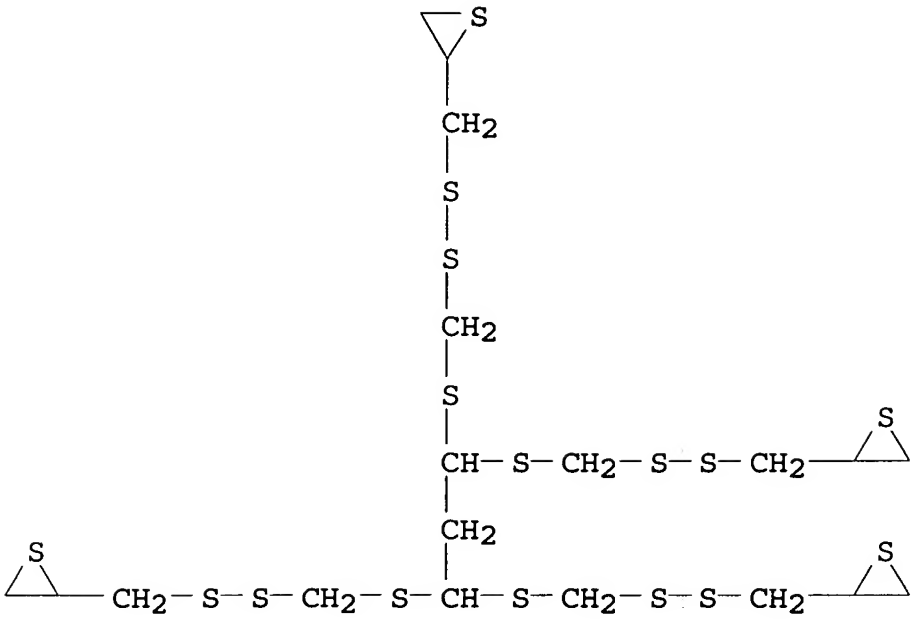
CRN 363138-81-2
CMF C7 H16 S8



RN 870074-48-9 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 1,3-bis(isocyanatomethyl)benzene and 2,2',2'',2'''-[1,3-propanediylidenetetrakis(thiomethylenedithiomethylene)]tetrakis[thiirane] (9CI) (CA INDEX NAME)

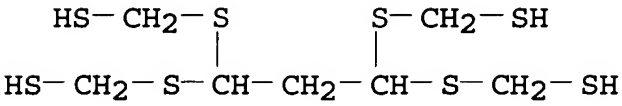
CM 1

CRN 869725-92-8
CMF C19 H32 S16



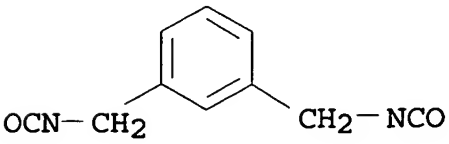
CM 2

CRN 363138-81-2
CMF C7 H16 S8



CM 3

CRN 3634-83-1
CMF C10 H8 N2 O2



IC ICM C08L081-04
ICS C08L075-04; G02B001-04
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 73

ST episulfide polymer optical low water absorption; epithiopropyldithiomethylthiopropane mercaptomethylthiopropane copolymer plastic lens; polythiourethane thioepoxy lens high **refractive** index

IT Lenses
(episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength for plastic lenses)

IT Polythioethers
(polysulfide-polythiourethane-thioepoxy; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength for plastic lenses)

IT Polythioethers
(polysulfide-thioepoxy; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength for plastic lenses)

IT Polysulfides
(polythioether-polythiourethane-thioepoxy; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength for plastic lenses)

IT Polysulfides
(polythioether-thioepoxy; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength for plastic lenses)

IT Epoxy resins, preparation
(thio-, polysulfide-polythioether-; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength for plastic lenses)

IT Epoxy resins, preparation
(thio-, polysulfide-polythioether-polythiourethane-; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength for plastic lenses)

IT Polyurethanes, preparation
(thio-, polysulfide-polythioether-thioepoxy; episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength for plastic lenses)

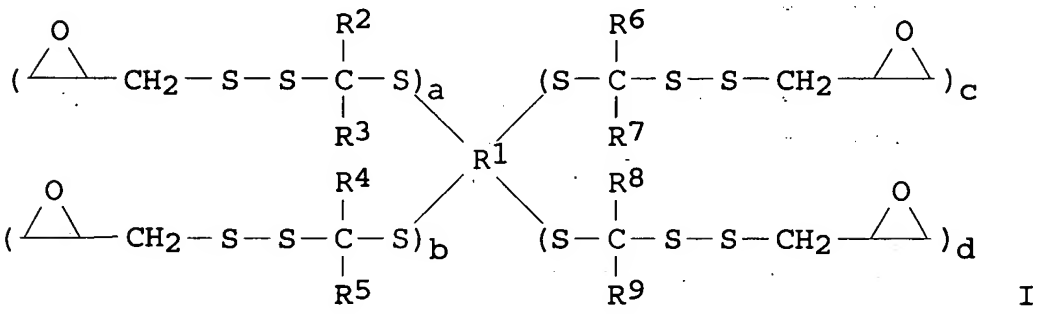
IT **870074-47-8P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer **870074-48-9P**, 1,1,3,3-Tetrakis(2,3-epithiopropyldithiomethylthio)propane-1,1,3,3-tetrakis(mercaptomethylthio)propane-m-xylylene diisocyanate copolymer
(episulfide-contg. polymer optical materials with high **refractive** index and good mech. strength for plastic lenses)

IT 7704-34-9, Sulfur, properties
(episulfide-contg. polymer optical materials with high

refractive index and good mech. strength for plastic lenses)

L28 ANSWER 6 OF 31 HCA COPYRIGHT 2006 ACS on STN
143:478988 Episulfide compounds with high **refractive** index and Abbe number. Morishiri, Hiroyuki; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2005325274 A2 20051124, 38 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2004-145745 20040517.

GI



I

AB The present invention relates to episulfide compds. I, wherein R1 = linear or branched C1-4 (thiano)hydrocarbon, cyclic C3-6 (thiano)hydrocarbon, 1,4-dithian, arylene, or aralkylene (R1 may be (un)substituted); R2-9 = H, or (thiano) C1-4 (un)substituted linear or branched hydrocarbon or cyclic C3-6 hydrocarbon; and a, b, c, d = 0 or 1 (2 .ltoreq. a + b + c + d .ltoreq. 4). Thus, 63 g bis(mercaptomethyl)sulfide and 420 g bis(2,3-epithiopropyl)disulfide were reacted in the presence of 0.5 g N,N-diisopropylethylamine at 30.degree. for 20 h to give 1,3-bis(2,3-epithiopropyldithio)-2-thiapropane, 30 g of which was mixed with 0.03 g Viosorb 583 and 0.06 g N,N-dimethylcyclohexylamine, poured into a mold, heated from 30.degree. to 120.degree. for 24 h to give a test piece, showing **refractive** index 1.77, Abee no. 30, glass transition temp. 98.degree., and good transparency.

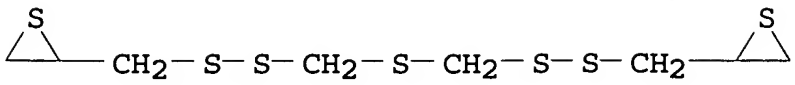
IT **869726-00-1P 869726-01-2P 869726-02-3P**
869726-03-4P 869726-04-5P 869726-05-6P
(prepn. of episulfide compds. with high **refractive** index and Abbe no.)

RN 869726-00-1 HCA

CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with 2,2'-[thiobis(methylenedithiomethylene)]bis[thiirene] (9CI) (CA INDEX NAME)

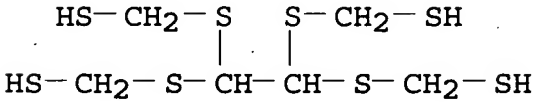
CM 1

CRN 869725-88-2
CMF C8 H14 S7



CM 2

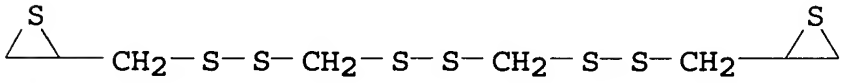
CRN 363138-82-3
CMF C6 H14 S8



RN 869726-01-2 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with 2,2'-[dithiobis(methylenedithiomethylene)]bis[thiirene] (9CI) (CA INDEX NAME)

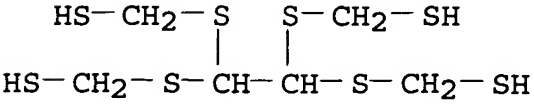
CM 1

CRN 869725-89-3
CMF C8 H14 S8



CM 2

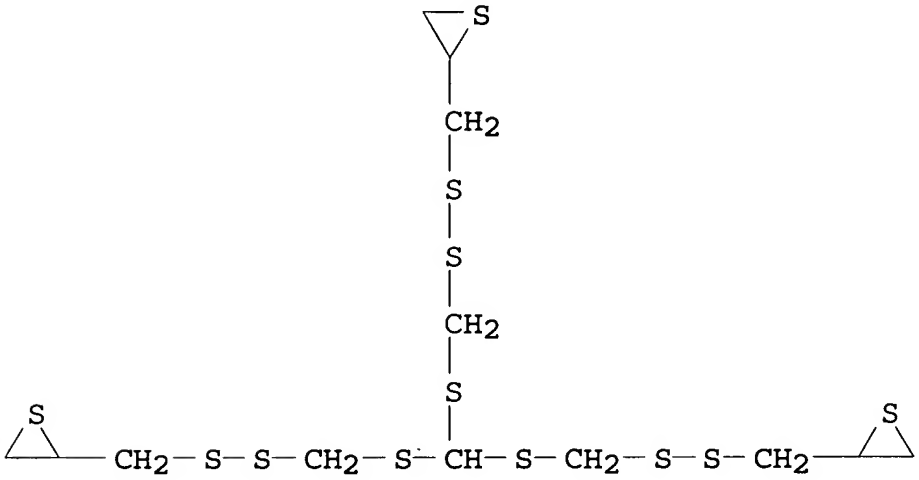
CRN 363138-82-3
CMF C6 H14 S8



RN 869726-02-3 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with 2,2',2''-[methylidynetris(thiomethylenedithiomethylene)]tris[thiirene] (9CI) (CA INDEX NAME)

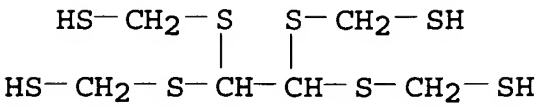
CM 1

CRN 869725-90-6
CMF C13 H22 S12



CM 2

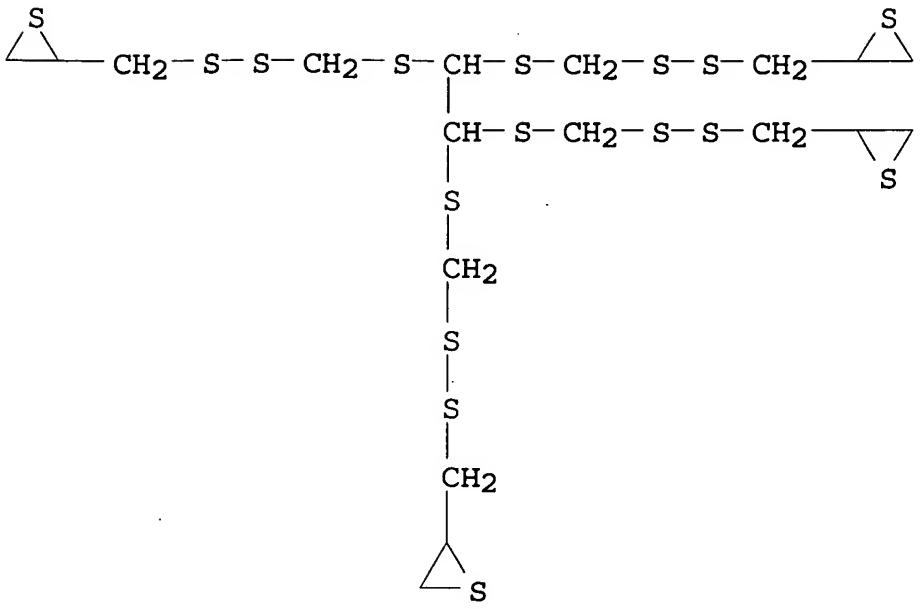
CRN 363138-82-3
CMF C6 H14 S8



RN 869726-03-4 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with 2,2',2'',2'''-[1,2-ethanediylidenetetrakis(thiomethylenedithiomethylene)]tetrakis[thiirene] (9CI) (CA INDEX NAME)

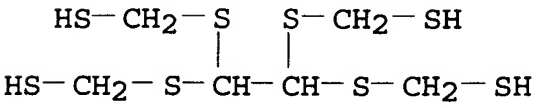
CM 1

CRN 869725-91-7
CMF C18 H30 S16



CM 2

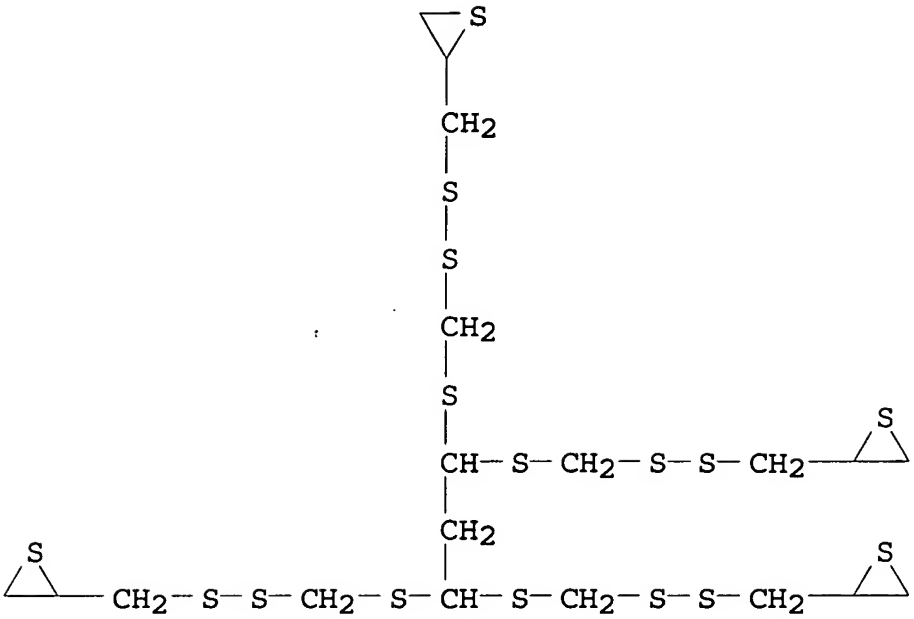
CRN 363138-82-3
CMF C6 H14 S8



RN 869726-04-5 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with 2,2',2'',2'''-[1,3-propanediylidenetetrakis(thiomethylenedithio methylene)]tetrakis[thiirene] (9CI) (CA INDEX NAME)

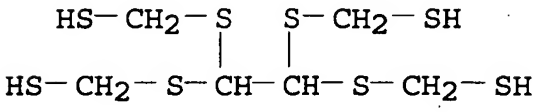
CM 1

CRN 869725-92-8
CMF C19 H32 S16



CM 2

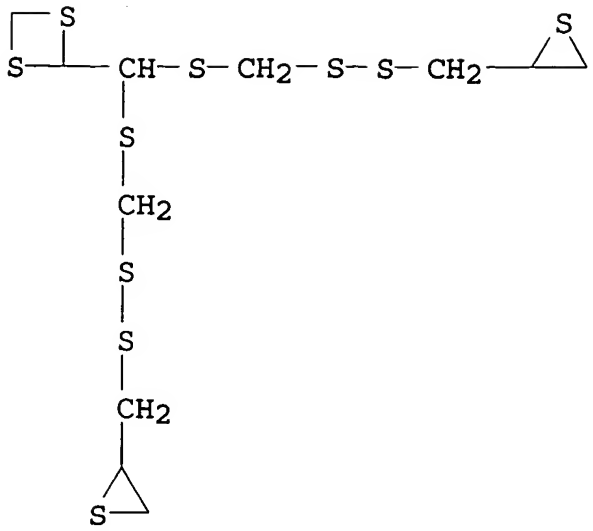
CRN 363138-82-3
CMF C6 H14 S8



RN 869726-05-6 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with 2-[bis[[[(thiiranylmethyl)dithio]methyl]thio]methyl]-1,3-dithietane (9CI) (CA INDEX NAME)

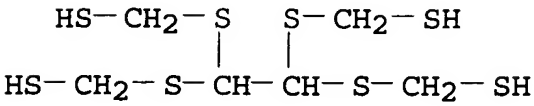
CM 1

CRN 869725-93-9
CMF C11 H18 S10



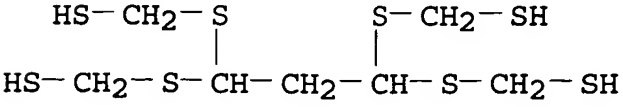
CM 2

CRN 363138-82-3
CMF C6 H14 S8

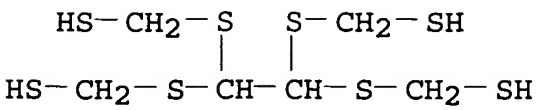


IT **363138-81-2**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane
363138-82-3, 1,1,2,2-Tetrakis(mercaptomethylthio)ethane
568565-57-1 574615-93-3
(reactant in monomer prepn.; prepn. of episulfide compds. with high **refractive** index and Abbe no.)

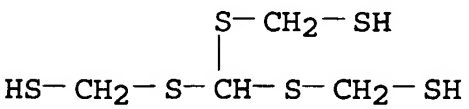
RN 363138-81-2 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis- (9CI) (CA INDEX NAME)



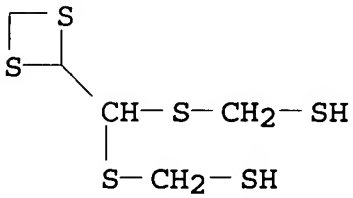
RN 363138-82-3 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis- (9CI) (CA INDEX NAME)



RN 568565-57-1 HCA
CN Methanethiol, 1,1',1''-[methylidynetris(thio)]tris- (9CI) (CA INDEX NAME)



RN 574615-93-3 HCA
CN Methanethiol, [(1,3-dithietan-2-ylmethylene)bis(thio)]bis- (9CI) (CA INDEX NAME)



IC ICM C08G075-08
ICS G02B001-04
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 35, 73
ST episulfide compd high **refractive** index Abbe number; bismercaptomethyl sulfide bisepithiopropyl disulfide reactant; bisepithiopropyldithiothiapropane monomer homopolymer
IT Optical materials
(prepn. of episulfide compds. with high **refractive** index and Abbe no.)
IT Heterocyclic compounds
(sulfur; prepn. of episulfide compds. with high **refractive** index and Abbe no.)
IT Epoxy resins, uses
(thio-, polysulfide-; prepn. of episulfide compds. with high **refractive** index and Abbe no.)
IT Polysulfides
(thioepoxy; prepn. of episulfide compds. with high **refractive** index and Abbe no.)
IT 869725-88-2P 869725-89-3P 869725-90-6P 869725-91-7P
869725-92-8P 869725-93-9P
(monomer; prepn. of episulfide compds. with high

refractive index and Abbe no.)

IT 869725-94-0P 869725-95-1P 869725-96-2P 869725-97-3P
869725-98-4P 869725-99-5P **869726-00-1P**
869726-01-2P 869726-02-3P 869726-03-4P
869726-04-5P 869726-05-6P
(prepn. of episulfide compds. with high **refractive** index and Abbe no.)

IT 7529-06-8, Bis(mercaptomethyl)sulfide 98485-71-3
363138-81-2, 1,1,3,3-Tetrakis(mercaptomethylthio)propane
363138-82-3, 1,1,2,2-Tetrakis(mercaptomethylthio)ethane
472965-82-5 **568565-57-1 574615-93-3**
(reactant in monomer prepn.; prepn. of episulfide compds. with high **refractive** index and Abbe no.)

L28 ANSWER 7 OF 31 HCA COPYRIGHT 2006 ACS on STN
143:348309 High-**refractive**-index and weather-resistant resin with improved brittle and impact resistance and its production method. Morishiri, Hiroyuki; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2005272785 A2 20051006, 18 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2004-92346 20040326.

AB The resin useful for optical material such as eyeglass lens comprises (A) compds. having 2 episulfide groups, (B) compds. having 2-4 mercapto groups and .gtoreq.1 sulfide linkage, (C) aliph. isocyanates having cyclic skeleton, and (D) p-toluenesulfonamide. Stirring a soln. contg. bis(2,3-epithiopropyl)sulfide 75, bis(2-mercaptoethyl)sulfide 12, pentaerythritol tetrakis(2-mercaptoacetate) 3, and tetrabutylphosphonium bromide 0.07 g, mixing with a compn. contg. m-xylene diisocyanate 10, dibutyltin dichloride 0.01, Zelec UN 0.01, and p-toluenesulfonamide 0.02 g, degassing, molding a mold at 120.degree. for 24 h, and annealing at 120.degree. for 2 h gave a transparent lens with high strength and no coloration.

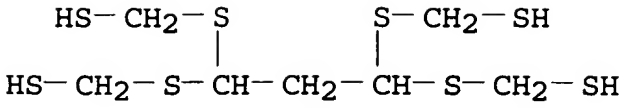
IT **866043-64-3**
(high-**refractive**-index and weather-resistant resin with improved brittle and impact resistance and its prodn. method)

RN 866043-64-3 HCA

CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 1,3-bis(isocyanatomethyl)benzene and 2,2'-[thiobis(methylene)]bis[thiirane] (9CI) (CA INDEX NAME)

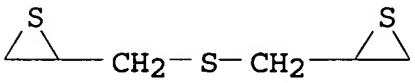
CM 1

CRN 363138-81-2
CMF C7 H16 S8



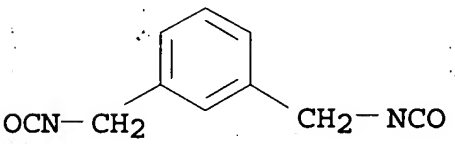
CM 2

CRN 188829-97-2
CMF C6 H10 S3



CM 3

CRN 3634-83-1
CMF C10 H8 N2 O2



IC ICM C08G075-02
ICS G02B001-04; G02C007-02
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 63, 73
ST episulfide resin **refractive** index weather brittle impact resistance; optical material eyeglass lens episulfide resin
IT Impact-resistant materials
Optical materials
(high-**refractive**-index and weather-resistant resin with improved brittle and impact resistance and its prodn. method)
IT Eyeglasses
(lens; high-**refractive**-index and weather-resistant resin with improved brittle and impact resistance and its prodn. method)
IT Epoxy resins, uses
(thio; high-**refractive**-index and weather-resistant resin with improved brittle and impact resistance and its prodn. method)
IT 866043-58-5P

(high-**refractive**-index and weather-resistant resin with improved brittle and impact resistance and its prodn. method)

IT 70-55-3, p-Toluenesulfonamide
(high-**refractive**-index and weather-resistant resin with improved brittle and impact resistance and its prodn. method)

IT 866043-59-6 **866043-64-3**
(high-**refractive**-index and weather-resistant resin with improved brittle and impact resistance and its prodn. method)

L28 ANSWER 8 OF 31 HCA COPYRIGHT 2006 ACS on STN

143:347949 Episulfide-based resins with high **refractive** index and rigidity. Morishiri, Hiroyuki; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2005272778 A2 20051006, 18 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2004-92024 20040326.

AB Title resins are prepd. from (A) compds. having .gtoreq.2 episulfide groups CH2(S)CHCH2S[(Y)mS]nCH2CH(S)CH2, (B) compds. having 2-4 mercapto groups (a mixt. of .gtoreq.1 compd. having 2-4 mercapto groups and .gtoreq.1 sulfide bond and .gtoreq.1 compd. having 3-4 mercapto groups and .gtoreq.1 carboxylic acid alc. ester), and (C) a compd. having .gtoreq.2 aliph. isocyanate groups and a cyclic structure, wherein Y = (un)substituted C1-4 linear or branched hydrocarbon, C3-6 cyclic hydrocarbon, or (un)substituted 1,4-dithiane, arylene, or aralkylene; m = 0-2 integer; and n = 0-3 integer. Thus, bis(2,3-epithiopropyl)sulfide 75, bis(2-mercaptoethyl)sulfide 12, pentaerythritol tetrakis(2-mercaptoacetate) 3, and tetrabutylphosphonium bromide 0.07 g were dissolved, a mixt. of m-xylene diisocyanate 10, dibutyltin dichloride 0.01, and Zelec UN 0.02 g was added therein and mixed, poured into a mold, heated slowly from 30.degree. to 120.degree. and polymd. for 24 h, and annealed at 120.degree. for 2 h to give a lens with good transparency, **refractive** index 1.70, Abbe no. 36, glass transition temp. 79.degree., and tensile strength 81 MPa.

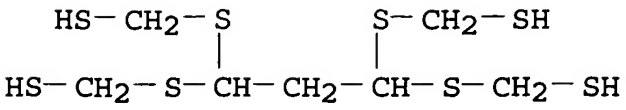
IT **866043-60-9P**
(episulfide-based resins with high **refractive** index and rigidity)

RN 866043-60-9 HCA

CN Propanoic acid, 3-mercapto-, 2-ethyl-2-[(3-mercapto-1-oxopropoxy)methyl]-1,3-propanediyl ester, polymer with 1,3-bis(isocyanatomethyl)benzene, [1,3-propanediylidenetetrakis(thio)]tetrakis[methanethiol] and 2,2'-[thiobis(methylene)]bis[thiirane] (9CI) (CA INDEX NAME)

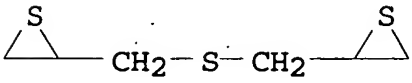
CM 1

CRN 363138-81-2
CMF C7 H16 S8



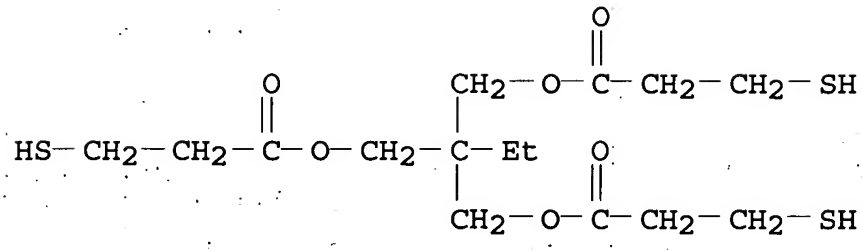
CM 2

CRN 188829-97-2
CMF C6 H10 S3



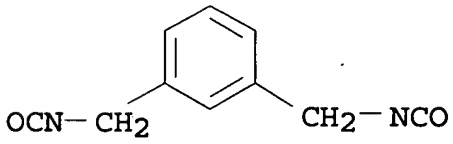
CM 3

CRN 33007-83-9
CMF C15 H26 O6 S3



CM 4

CRN 3634-83-1
CMF C10 H8 N2 O2



IC ICM C08G075-08
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 73
ST episulfide resin high **refractive** index rigidity;
bisepithiopropyl bismercaptoethyl sulfide pentaerythritol

tetrakismercaptoacetate xylene diisocyanate copolymer

IT Optical materials
(episulfide-based resins with high **refractive** index and rigidity)

IT Eyeglass lenses
(plastic; episulfide-based resins with high **refractive** index and rigidity)

IT Polythioethers
(polysulfide-polythiourethane-thioepoxy; episulfide-based resins with high **refractive** index and rigidity)

IT Polysulfides
(polythioether-polythiourethane-thioepoxy; episulfide-based resins with high **refractive** index and rigidity)

IT Epoxy resins, preparation
(thio-, polysulfide-polythioether-polythiourethane-; episulfide-based resins with high **refractive** index and rigidity)

IT Polyurethanes, preparation
(thio-, polysulfide-polythioether-thioepoxy; episulfide-based resins with high **refractive** index and rigidity)

IT 866043-58-5P 866043-59-6P **866043-60-9P**
(episulfide-based resins with high **refractive** index and rigidity)

L28 ANSWER 9 OF 31 HCA COPYRIGHT 2006 ACS on STN

143:249418 Plastic lenses with hard coat and anti-**refractive** coating. Saito, Toru; Yamamoto, Akinori; Iryo, Takeaki (Seiko Epson Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2005234530 A2 20050902, 18 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2004-317557 20041101. PRIORITY: JP 2004-13209 20040121.

AB Title lenses are made from a substrate material prepd. from polythiol compds., R-(SCH2-SH)n (R = arom. ring residue, n > 1 integer), and compds. having functional groups that can react with mercapto groups, hard coat comprising inorg. oxide particles having a particle size of 1-100 nm selected from SiO2, Al2O3, SnO2, Sb2O3, Ta2O5, CeO2, La2O3, Fe2O3, ZnO, WO3, ZrO2, In2O3, TiO2, and org. silicon compds., R1nR2pSiX14-p-m (R1 = polymerizable groups, R2 = C1-6 hydrocarbon groups, X1 = hydrolyzable groups, m, p = 0 or 1), and an anti-**refractive** membrane on top of the hard coat, which consists of org. silicon compds., R3rR4qSiX24-q-r (R3 = polymerizable groups, R4 = C1-6 hydrocarbon groups, X2 = hydrolyzable groups, q, r = 0 or 1), and silica microparticles. Thus, lenses made from polythiourethanes prepd. from m-Xylylene diisocyanate and 1,1,3,3-tetrakis(mercaptomethylthiol)propane were impregnated with hard coat contg. butylcellosolve, .gamma.-glycidoxypropyltrimethoxysilane and TiO2-ZrO2-SiO2 composite particles, followed by depositing with SiO2, ZrO2, SiO2, ZrO2, and SiO2 to receive antiflective membrane on the top of the hard coat to

obtain an eyeglass lens.

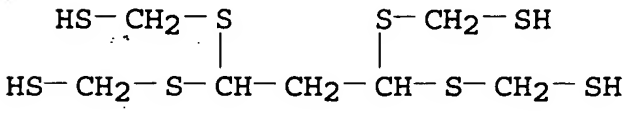
IT **363138-86-7P**, m-Xylylene diisocyanate-1,1,3,3-tetrakis(mercaptomethylthiol)propane copolymer **363138-88-9P** (plastic lenses with hard coat and anti-**refractive** coating)

RN 363138-86-7 HCA

CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 1,3-bis(isocyanatomethyl)benzene (9CI) (CA INDEX NAME)

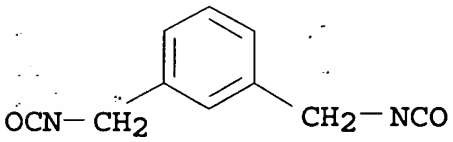
CM 1

CRN 363138-81-2
CMF C7 H16 S8



CM 2

CRN 3634-83-1
CMF C10 H8 N2 O2

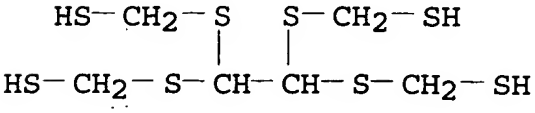


RN 363138-88-9 HCA

CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with 1,3-bis(isocyanatomethyl)benzene (9CI) (CA INDEX NAME)

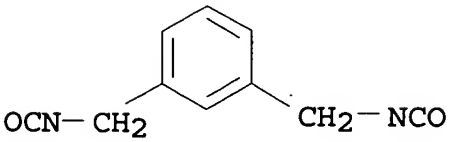
CM 1

CRN 363138-82-3
CMF C6 H14 S8



CM 2

CRN 3634-83-1
CMF C10 H8 N2 O2



IC ICM G02C007-02
ICS C08G018-38; G02B001-04
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 37, 42
IT Silanes
(fluoro; plastic lenses with hard coat and anti-**refractive** coating)
IT Antireflective films
Eyeglass lenses
Hardfacing
Microparticles
(plastic lenses with hard coat and anti-**refractive** coating)
IT Polysiloxanes, uses
Silsesquioxanes
(plastic lenses with hard coat and anti-**refractive** coating)
IT Silica gel, uses
(plastic lenses with hard coat and anti-**refractive** coating)
IT Polyurethanes, uses
(thio-; plastic lenses with hard coat and anti-**refractive** coating)
IT 1306-38-3, Cerium oxide, uses 1309-37-1, Iron oxide, uses 1312-43-2, Indium oxide 1314-13-2, Zinc oxide, uses 1314-23-4, Zirconium oxide, uses 1314-35-8, Tungsten oxide, uses 1314-61-0, Tantalum oxide 1344-28-1, Aluminum oxide, uses 13463-67-7, Titanium oxide, uses 18282-10-5, Tin dioxide
(composite particles; plastic lenses with hard coat and anti-**refractive** coating)
IT 683-18-1, Dibutyltin dichloride 14024-18-1, Iron acetylacetonate
(plastic lenses with hard coat and anti-**refractive** coating)
IT 111-76-2DP, Butylcellosolve, reaction products with polysiloxanes 56325-93-0DP, .gamma.-Glycidoxypropyltrimethoxysilane homopolymer, reaction products with butylcellosolve 143150-06-5P, .gamma.-Glycidoxypropyltrimethoxysilane-methyltrimethoxysilane-tetraethoxysilane copolymer **363138-86-7P**, m-Xylylene diisocyanate-1,1,3,3-tetrakis(mercaptomethylthiol)propane copolymer

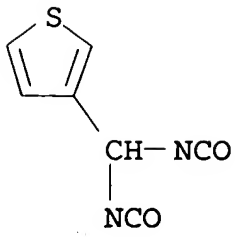
363138-88-9P
(plastic lenses with hard coat and anti-**refractive** coating)
IT 1314-60-9, Antimony oxide 7631-86-9, Oscal 1132, uses
863514-92-5, Optolake 1120ZS7G 863514-93-6, Optolake 1120Z-S25A8
(plastic lenses with hard coat and anti-**refractive** coating)

L28 ANSWER 10 OF 31 HCA COPYRIGHT 2006 ACS on STN
143:194995 Polyisocyanates, their compositions, their polymers with good heat resistance and high **refractive** index, and uses as transparent materials, optical materials, and lenses. Morijiri, Hiroyuki; Kuma, Shigenori; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2005220207 A2 20050818, 24 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2004-28809 20040205.
AB The invention relates to QSa(CH2)bCH[Sc(CH2)eNCO][Sc(CH2)fNCO] (Q = thiophenyl; a, b, c, d = 0-1; e, f = 0-2) or Q[Sg(CH2)hNCO]2 (Q = thiophenylene; g = 0-1; h = 1-2). Thus, 3-(1,1-diisocyanatomethyl)thiophene-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer showed **refractive** index 1.740, Abbe no. 29, and Tg 142.degree..
IT **861660-13-1P**, 3-(1,1-Diisocyanatomethyl)thiophene-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer **861660-14-2P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane-2-(2-thienylthio)-1,2-diisocyanatoethane copolymer **861660-15-3P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane-3-(2-thienyl)-1,5-diisocyanato-2,4-dithiapentane copolymer **861660-17-5P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane-3-(2-thienylthiomethyl)-1,5-diisocyanato-2,4-dithiapentane copolymer **861660-18-6P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane-3-(2-thienylthio)-1,5-diisocyanato-2,4-dithiapentane copolymer **861660-19-7P**, 2,5-Bis(isocyanatomethylthio)thiophene-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer **861660-21-1P**, 2,5-Bis(isocyanatomethyl)thiophene-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer **861660-22-2P**, 2,5(6)-Bis(isocyanatomethyl)bicyclo[2.2.1]heptane-2,5-bis(isocyanatomethyl)thiophene-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer
(polyisocyanate polymers with good heat resistance and high **refractive** index for transparent materials and lenses)
RN 861660-13-1 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 3-(diisocyanatomethyl)thiophene (9CI) (CA INDEX NAME)

CM 1

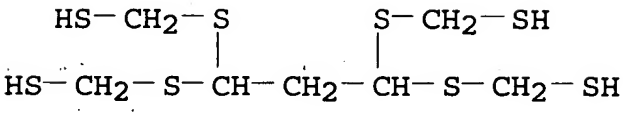
CRN 861660-05-1

CMF C7 H4 N2 O2 S



CM 2

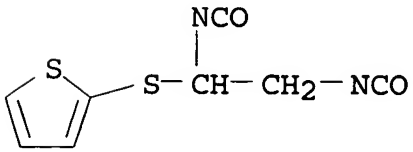
CRN 363138-81-2
CMF C7 H16 S8



RN 861660-14-2 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2-[(1,2-diisocyanatoethyl)thio]thiophene (9CI) (CA INDEX NAME)

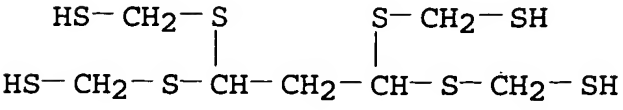
CM 1

CRN 861660-06-2
CMF C8 H6 N2 O2 S2



CM 2

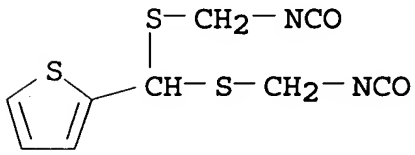
CRN 363138-81-2
CMF C7 H16 S8



RN 861660-15-3 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2-[bis[(isocyanatomethyl)thio]methyl]thiophene (9CI) (CA INDEX NAME)

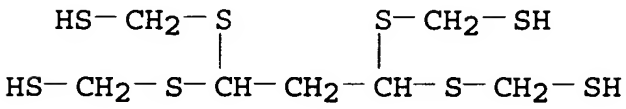
CM 1

CRN 861660-07-3
CMF C9 H8 N2 O2 S3



CM 2

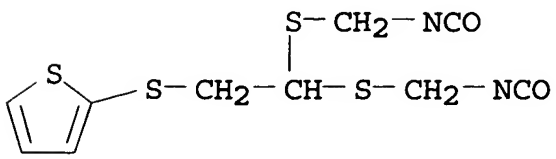
CRN 363138-81-2
CMF C7 H16 S8



RN 861660-17-5 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2-[[2,2-bis[(isocyanatomethyl)thio]ethyl]thio]thiophene (9CI) (CA INDEX NAME)

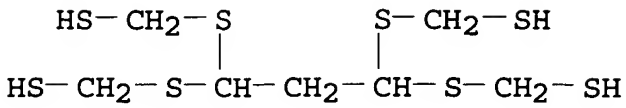
CM 1

CRN 861660-16-4
CMF C10 H10 N2 O2 S4



CM 2

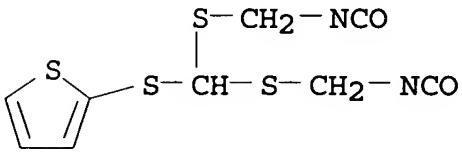
CRN 363138-81-2
CMF C7 H16 S8



RN 861660-18-6 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2-[[bis[(isocyanatomethyl)thio]methyl]thio]thiophene (9CI) (CA INDEX NAME)

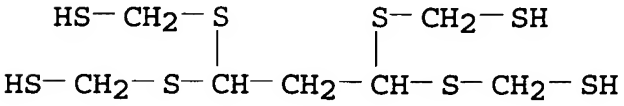
CM 1

CRN 861660-10-8
CMF C9 H8 N2 O2 S4



CM 2

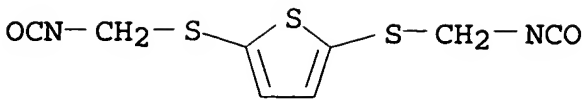
CRN 363138-81-2
CMF C7 H16 S8



RN 861660-19-7 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2,5-bis[(isocyanatomethyl)thio]thiophene (9CI) (CA INDEX NAME)

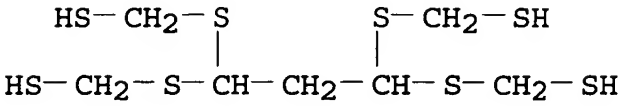
CM 1

CRN 861660-12-0
CMF C8 H6 N2 O2 S3



CM 2

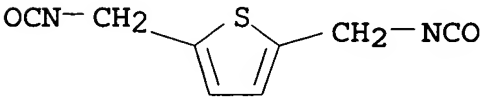
CRN 363138-81-2
CMF C7 H16 S8



RN 861660-21-1 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2,5-bis(isocyanatomethyl)thiophene (9CI) (CA INDEX NAME)

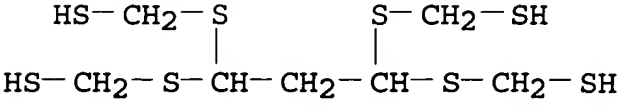
CM 1

CRN 861660-20-0
CMF C8 H6 N2 O2 S



CM 2

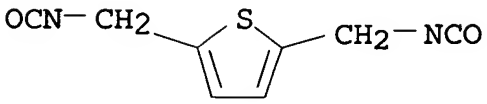
CRN 363138-81-2
CMF C7 H16 S8



RN 861660-22-2 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2,5(or 2,6)-bis(isocyanatomethyl)bicyclo[2.2.1]heptane and 2,5-bis(isocyanatomethyl)thiophene (9CI) (CA INDEX NAME)

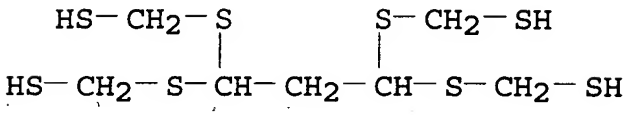
CM 1

CRN 861660-20-0
CMF C8 H6 N2 O2 S



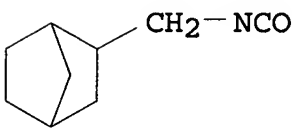
CM 2

CRN 363138-81-2
CMF C7 H16 S8



CM 3

CRN 74091-64-8
CMF C11 H14 N2 O2
CCI IDS



D1—CH_2—NCO

IC ICM C08G018-77
ICS C07D333-20; C07D333-34; G02B001-04; G02B007-02
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 35, 73
ST heat resistance diisocyanatomethylthiophene tetramercaptomethylthiopropane copolymer lense; transparency thiophenyl polyisocyanate polythiourethane polythioether optical; **refractive** index thiophenylene diisocyanate polymer polythiourethane
IT Lenses
Transparent materials

(polyisocyanate polymers with good heat resistance and high **refractive** index for transparent materials and lenses)

IT Polythioethers
(polythiourethane-; polyisocyanate polymers with good heat resistance and high **refractive** index for transparent materials and lenses)

IT Polyurethanes, uses
(thio-, polythioether-; polyisocyanate polymers with good heat resistance and high **refractive** index for transparent materials and lenses)

IT 98558-44-2P, 2-Thienylthioacetaldehyde dimethyl acetal 861660-07-3P, 3-(2-Thienyl)-1,5-diisocyanato-2,4-dithiapentane 861660-08-4P 861660-09-5P 861660-10-8P, 3-(2-Thienylthio)-1,5-diisocyanato-2,4-dithiapentane 861660-12-0P, 2,5-Bis(isocyanatomethylthio)thiophene 861660-16-4P, 3-(2-Thienylthiomethyl)-1,5-diisocyanato-2,4-dithiapentane 861660-20-0P, 2,5-Bis(isocyanatomethyl)thiophene
(polyisocyanate polymers with good heat resistance and high **refractive** index for transparent materials and lenses)

IT 7252-83-7DP, Bromoacetaldehydedimethylacetal, reaction products with 2-mercaptothiophene potassium salt, ester with Me thioglycolate 13752-93-7P, 2,5-Bis(aminomethyl)thiophene 28569-48-4P, 2,5-Bis(chloromethyl)thiophene 57713-39-0P, Dimethyl 2-thienylthiobutanedioate 251939-21-6P, Dimethyl 2,2'-[(2-thienylmethylene)bis(thio)]bisacetate 861660-05-1P, 3-(1,1-Diisocyanatomethyl)thiophene 861660-06-2P, 2-(2-Thienylthio)-1,2-diisocyanatoethane 861660-11-9P
(polyisocyanate polymers with good heat resistance and high **refractive** index for transparent materials and lenses)

IT **861660-13-1P**, 3-(1,1-Diisocyanatomethyl)thiophene-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer **861660-14-2P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane-2-(2-thienylthio)-1,2-diisocyanatoethane copolymer **861660-15-3P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane-3-(2-thienyl)-1,5-diisocyanato-2,4-dithiapentane copolymer **861660-17-5P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane-3-(2-thienylthiomethyl)-1,5-diisocyanato-2,4-dithiapentane copolymer **861660-18-6P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane-3-(2-thienylthio)-1,5-diisocyanato-2,4-dithiapentane copolymer **861660-19-7P**, 2,5-Bis(isocyanatomethylthio)thiophene-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer **861660-21-1P**, 2,5-Bis(isocyanatomethyl)thiophene-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer **861660-22-2P**, 2,5(6)-Bis(isocyanatomethyl)bicyclo[2.2.1]heptane-2,5-bis(isocyanatomethyl)thiophene-1,1,3,3-tetrakis(mercaptomethylthio)propane copolymer
(polyisocyanate polymers with good heat resistance and high **refractive** index for transparent materials and lenses)

IT 50-00-0, Formaldehyde, reactions 75-44-5, Phosgene 98-03-3, 2-Thiophenealdehyde 110-02-1, Thiophene 149-73-5 302-01-2, Hydrazine, reactions 624-48-6, Dimethyl maleate 625-56-9, Chloromethyl acetate 7647-01-0, Hydrochloric acid, reactions 7664-41-7, Ammonia, reactions 7774-74-5, 2-Mercaptothiophene 22511-31-5, 2,5-Dimercaptothiophene 70158-52-0, Dimethyl 3-thienyl-malonate
(polyisocyanate polymers with good heat resistance and high **refractive** index for transparent materials and lenses)

IT 124-41-4, Sodium methoxide 1310-58-3, Potassium hydroxide, reactions 7632-00-0, Sodium nitrite
(polyisocyanate polymers with good heat resistance and high **refractive** index for transparent materials and lenses)

L28 ANSWER 11 OF 31 HCA COPYRIGHT 2006 ACS on STN
143:86386 Compositions for manufacture of transparent polymers with high **refractive** index and improved heat resistance. Morishiri, Hiroyuki; Kuma, Shigenori; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2005171055 A2 20050630, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-411838 20031210.

AB The compns. comprise thiophene diisocyanates and polythiols having sulfide linkages, disulfide linkages, and/or benzene rings. The polymers, useful for optical materials, plastic lenses, etc., are manufd. by cast polymn. of the compns.

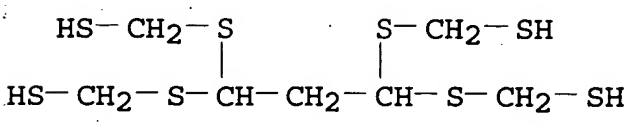
IT **855587-85-8P 855587-86-9P**
(compns. for manuf. of transparent polythiourethanes with high **refractive** index and improved heat resistance)

RN 855587-85-8 HCA

CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2,5-diisocyanatothiophene (9CI) (CA INDEX NAME)

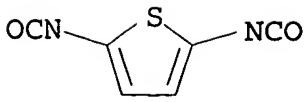
CM 1

CRN 363138-81-2
CMF C7 H16 S8



CM 2

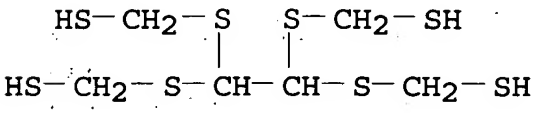
CRN 109796-92-1
CMF C6 H2 N2 O2 S



RN 855587-86-9 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with 2,5-diisocyanatothiophene (9CI) (CA INDEX NAME)

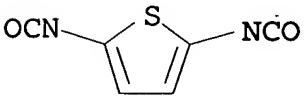
CM 1

CRN 363138-82-3
CMF C6 H14 S8



CM 2

CRN 109796-92-1
CMF C6 H2 N2 O2 S



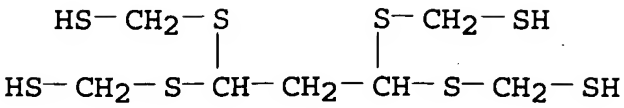
IC ICM C08G018-77
ICS C08G018-32; G02B001-04
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 38
IT Polymerization
(casting; compns. for manuf. of transparent polythiourethanes with high **refractive** index and improved heat resistance)
IT Lenses
Optical materials
Polymerization catalysts
Transparent materials
(compns. for manuf. of transparent polythiourethanes with high **refractive** index and improved heat resistance)
IT Polythioethers
(polythiourethane-; compns. for manuf. of transparent polythiourethanes with high **refractive** index and

improved heat resistance)
IT Polyurethanes, properties
(thio-, polythioether-; compns. for manuf. of transparent polythiourethanes with high **refractive** index and improved heat resistance)
IT Polyurethanes, properties
(thio-; compns. for manuf. of transparent polythiourethanes with high **refractive** index and improved heat resistance)
IT **855587-85-8P 855587-86-9P** 855587-87-0P
855587-88-1P
(compns. for manuf. of transparent polythiourethanes with high **refractive** index and improved heat resistance)
IT 77-58-7, Dibutyltin dilaurate
(polymn. catalyst; compns. for manuf. of transparent polythiourethanes with high **refractive** index and improved heat resistance)

L28 ANSWER 12 OF 31 HCA COPYRIGHT 2006 ACS on STN
143:27831 High-**refractive**-index transparent polythiourethane resin compositions, optical instruments therefrom, and manufacture thereof. Morishiri, Hiroyuki; Kuma, Shigenori; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2005154692 A2 20050616, 18 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-399234 20031128.
AB The compns. contain .gtoreq.30% (to total isocyanate compds.) thiophene diisocyanate, aliph, isocyanates, and .gtoreq.2-functional (aliph.) thiols. Transparent resins prepd. by polymn. of the compns. in molds, and plastic lenses and other optical instruments comprising the resins, are further claimed. Thus, a compn. contg. 2,5-thiophene diisocyanate 14.0, m-xylylene diisocyanate 6.0, 1,1,3,3-tetrakis(mercaptomethylthio)propane 20.8 g, Zelec UN (acidic phosphate ester), and Viosorb 583 (UV absorber) was poured in a mold and polymd. upon temp. elevation, released from the mold, and annealed at 120.degree. to give a transparent molding showing n 1.739, Abbe no. 28, sp. gr. 1.45, and no turbidity.
IT **853053-94-8P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane-2,5-thiophene diisocyanate-m-xylylene diisocyanate copolymer **853053-95-9P**, 2,5(6)-Bis(isocyanatomethyl)bicyclo[2.2.1]heptane-1,1,3,3-tetrakis(mercaptomethylthio)propane-2,5-thiophene diisocyanate copolymer **853053-96-0P**, Bis(isocyanatomethyl)sulfide-1,1,3,3-tetrakis(mercaptomethylthio)propane-2,5-thiophene diisocyanate copolymer
(high-n and -Abbe's no. transparent polythiourethane resin compns. for lenses and optical instruments)
RN 853053-94-8 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 1,3-bis(isocyanatomethyl)benzene and 2,5-diisocyanatothiophene (9CI) (CA INDEX NAME)

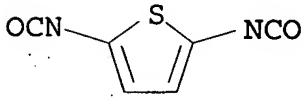
CM 1

CRN 363138-81-2
CMF C7 H16 S8



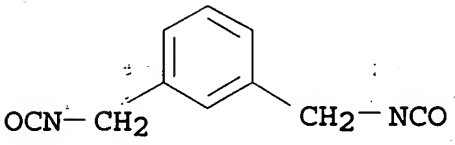
CM 2

CRN 109796-92-1
CMF C6 H2 N2 O2 S



CM 3

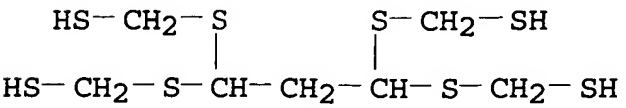
CRN 3634-83-1
CMF C10 H8 N2 O2



RN 853053-95-9 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2,5(or 2,6)-bis(isocyanatomethyl)bicyclo[2.2.1]heptane and 2,5-diisocyanatothiophene (9CI) (CA INDEX NAME)

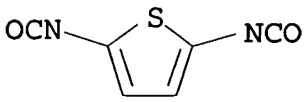
CM 1

CRN 363138-81-2
CMF C7 H16 S8



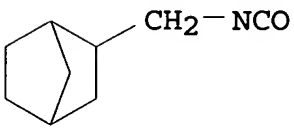
CM 2

CRN 109796-92-1
CMF C6 H2 N2 O2 S



CM 3

CRN 74091-64-8
CMF C11 H14 N2 O2
CCI IDS

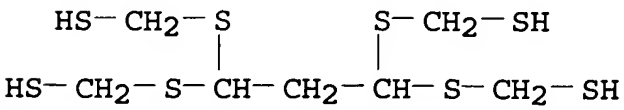


D1—CH_2—NCO

RN 853053-96-0 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 2,5-diisocyanatothiophene and thiobis[isocyanatomethane] (9CI) (CA INDEX NAME)

CM 1

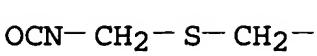
CRN 363138-81-2
CMF C7 H16 S8



CM 2

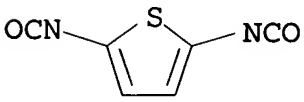
CRN 149683-00-1

CMF C4 H4 N2 O2 S



CM 3

CRN 109796-92-1
CMF C6 H2 N2 O2 S

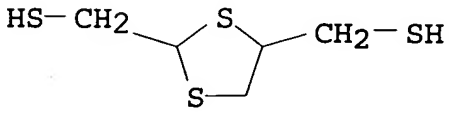


IC ICM C08G018-77
ICS G02B001-04
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 73
ST transparent polythiourethane resin thiophene diisocyanate polymd; Abbe no **refractive** index high polythiourethane; mercaptomethylthiopropane thiophene xylylene diisocyanate plastic lens
IT **853053-94-8P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane-2,5-thiophene diisocyanate-m-xylylene diisocyanate copolymer **853053-95-9P**, 2,5(6)-Bis(isocyanatomethyl)bicyclo[2.2.1]heptane-1,1,3,3-tetrakis(mercaptomethylthio)propane-2,5-thiophene diisocyanate copolymer **853053-96-0P**, Bis(isocyanatomethyl)sulfide-1,1,3,3-tetrakis(mercaptomethylthio)propane-2,5-thiophene diisocyanate copolymer 853053-97-1P, 4-Mercaptomethyl-1,8-dimercapto-3,6-dithiaoctane-2,5-thiophene diisocyanate-2,5(6)-bis(isocyanatomethyl)bicyclo[2.2.1]heptane copolymer 853053-98-2P, 1,1,1,1-Tetrakis(mercaptomethyl)methane-2,5-thiophene diisocyanate-2,5(6)-bis(isocyanatomethyl)bicyclo[2.2.1]heptane copolymer
(high-n and -Abbe's no. transparent polythiourethane resin compns. for lenses and optical instruments)

L28 ANSWER 13 OF 31 HCA COPYRIGHT 2006 ACS on STN
141:191647 Polythiols capable of being purified by distillation, their composition, transparent resins, and applications, and manufacture of the polythiols and the resins. Morishiri, Hiroyuki; Tanaka, Mamoru; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2004231538 A2 20040819, 17 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-19800 20030129.
AB The polythiols are 2-mercaptomethyl-4-mercapto-1,3-dithiolane (I), 2, 3 or 5 or 6-dimercapto-1,4-dithiane, and 2,4-dimercaptomethyl-1,3-

dithiethane(II). The transparent resins are useful for optical materials for plastic lenses. Thus, Cl2CHCH2Cl was treated with Na trithiocarbonate, HCl added, washed with water, dried with MgSO4, condensed, and distd. to give a colorless distillate comprising I, II, 2,5-dimercapto-1,4-dithiane (III), and 2,6-dimercapto-1,4-dithiane (IV). A molding comprising I-II-III-IV-4-mercaptomethyl-1,8-dimercapto-3,6-dithiaoctane-m-xylylene diisocyanate copolymer showed **refractive** index 1.692, good heat resistance, and no optical distortion.

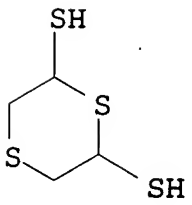
IT **153729-29-4P**, 1,3-Dithiolane-2,4-dimethanethiol
(manuf. of distillable polythiols for plastic optical materials)
RN 153729-29-4 HCA
CN 1,3-Dithiolane-2,4-dimethanethiol (9CI) (CA INDEX NAME)



IT **738599-29-6P**
(manuf. of distillable polythiols for plastic optical materials)
RN 738599-29-6 HCA
CN 1,4-Dithiane-2,5-dithiol, polymer with 1,3-bis(isocyanatomethyl)benzene, 2,3-bis[(2-mercaptoethyl)thio]-1-propanethiol, 1,4-dithiane-2,6-dithiol, 1,3-dithiolane-2,4-dimethanethiol and 4-mercapto-1,3-dithiolane-2-methanethiol (9CI) (CA INDEX NAME)

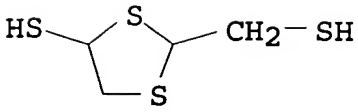
CM 1

CRN 738599-28-5
CMF C4 H8 S4



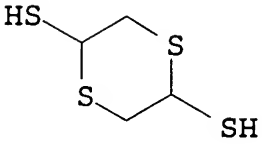
CM 2

CRN 738599-27-4
CMF C4 H8 S4



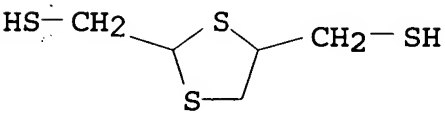
CM 3

CRN 645404-26-8
CMF C4 H8 S4



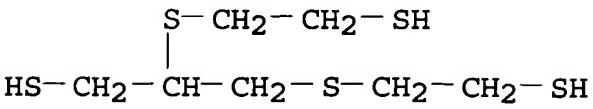
CM 4

CRN 153729-29-4
CMF C5 H10 S4



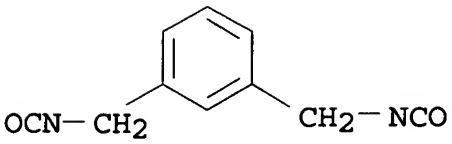
CM 5

CRN 131538-00-6
CMF C7 H16 S5



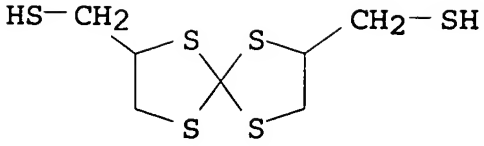
CM 6

CRN 3634-83-1
CMF C10 H8 N2 O2



IC ICM C07D339-00
ICS C07D339-06; C07D339-08; C08G018-38; G02B001-04
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 28, 35, 73
IT **153729-29-4P**, 1,3-Dithiolane-2,4-dimethanethiol
645404-26-8P, 1,4-Dithiane-2,5-dithiol 738599-27-4P
738599-28-5P, 1,4-Dithiane-2,6-dithiol
(manuf. of distillable polythiols for plastic optical materials)
IT **738599-29-6P**
(manuf. of distillable polythiols for plastic optical materials)

L28 ANSWER 14 OF 31 HCA COPYRIGHT 2006 ACS on STN
141:107093 Spirotetrathiocarbamates and spirooxothiocarbamates useful for monomers for optical plastics. Jallouli, Aref; Rickwood, Martin; Morgan, Kimberly; Wanigatunga, Sirisoma (Essilor International Compagnie Generale d'Optique, Fr.). PCT Int. Appl. WO 2004056879 A2 20040708, 56 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2003-EP15046 20031219. PRIORITY: US 2002-PV435949 20021220.
AB Spirotetrathiocarbamates or their oxa substituted compds. are prepd. and useful as monomers for optical resins such as that for opthalmic lenses with high **refractive** index and transparency. An example of spirotetrathiocarbamates, i.e., 2,7-bis(mercaptomethyl)-1,4,6,9-tetrathiospiro[4.4]nonane was prepd. and copolymd. with xylylene diisocyanate using Bu2Sn dilaurate to give a polythiourethane.
IT **717915-07-6P**
(manuf. of spirotetrathiocarbamates and spirooxothiocarbamates useful as monomers for manuf. of optical plastics)
RN 717915-07-6 HCA
CN 1,4,6,9-Tetrathiaspiro[4.4]nonane-2,7-dimethanethiol (9CI) (CA INDEX NAME)



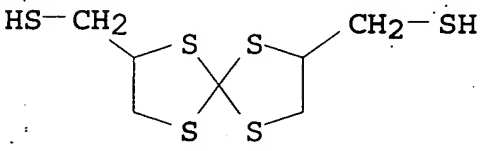
IT **717915-35-0P 717915-37-2P**
(manuf. of spirotetrathiocarbamates and spirooxothiocarbamates useful as monomers for manuf. of optical plastics)

RN 717915-35-0 HCA

CN 1,4,6,9-Tetrathiaspiro[4.4]nonane-2,7-dimethanethiol, polymer with bis(isocyanatomethyl)benzene (9CI) (CA INDEX NAME)

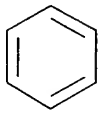
CM 1

CRN 717915-07-6
CMF C7 H12 S6



CM 2

CRN 25854-16-4
CMF C10 H8 N2 O2
CCI IDS



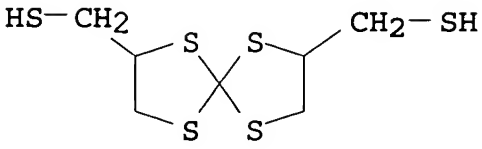
2 [D1—CH2—NCO]

RN 717915-37-2 HCA

CN 1,4,6,9-Tetrathiaspiro[4.4]nonane-2,7-dimethanethiol, polymer with 1,3-bis(isocyanatomethyl)benzene (9CI) (CA INDEX NAME)

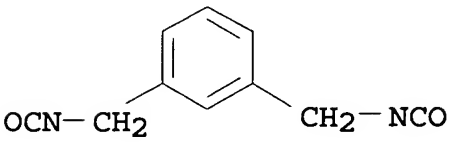
CM 1

CRN 717915-07-6
CMF C7 H12 S6



CM 2

CRN 3634-83-1
CMF C10 H8 N2 O2



IC ICM C08F
CC 37-2 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 63
ST thiocarbamate spiro monomer transparent **refractive** index plastic manuf; lens manuf spirotetrathiocarbamate spirooxothiocarbamate monomer manuf
IT 717915-01-0P 717915-03-2P **717915-07-6P** 717915-09-8P
717915-12-3P 717915-14-5P 717915-16-7P 717915-18-9P
717915-20-3P 717915-22-5P 717915-24-7P 717915-27-0P
717915-29-2P 717915-31-6P 717915-33-8P
(manuf. of spirotetrathiocarbamates and spirooxothiocarbamates useful as monomers for manuf. of optical plastics)
IT **717915-35-0P 717915-37-2P** 717915-39-4P
717915-42-9P 717915-45-2P 718629-17-5P
(manuf. of spirotetrathiocarbamates and spirooxothiocarbamates useful as monomers for manuf. of optical plastics)

L28 ANSWER 15 OF 31 HCA COPYRIGHT 2006 ACS on STN
139:324201 Thiourethane-based optical materials. Tanaka, Mamoru; Kuma, Shigetoshi; Funaya, Munehito; Kobayashi, Seiichi (Mitsui Chemicals, Inc., Japan). PCT Int. Appl. WO 2003089488 A1 20031030, 50 pp.
DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG,

CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2003-JP4816 20030416. PRIORITY: JP 2002-117531 20020419.

AB High-**refractive**-index resins are prepd. from polythiol compds. having a dithioacetal, dithioketal, o-trithioformate, or o-tetrathiocarbonate skeleton and .gtoreq.2 mercapto groups and compds. having .gtoreq.2 iso(thio)cyanate groups at molar ratios of the mercapto groups to the iso(thio)cyanate groups 1.0-3.0, excluding 1.0. Thus, tri-Me orthoformate reacted with methanedithiol to prep. a polythiol mixt. contg. tris(mercaptomethylthio)methane, 1,1,5,5-tetrakis(mercaptomethylthio)-2,4-dithiapentane, and bis(4,4-bis(mercaptomethylthio)-1,3-dithiabutyl)(mercaptomethylthio)-methane, mixed with xylylene diisocyanate at SH-NCO ratio 1.12 and a catalyst, a release agent, a UV absorber, and molded to prep. a lens.

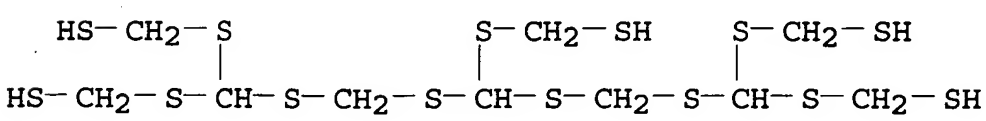
IT **614753-27-4P 614753-29-6P**
(manuf. of polythiols and polymn. with polyisocyanates for thiourethane optical materials)

RN 614753-27-4 HCA

CN 2,4,6,8,10,12-Hexathiatridecane-1,13-dithiol, 3,7,11-tris[(mercaptomethyl)thio]-, polymer with bis(isocyanatomethyl)benzene, 3,7-bis[(mercaptomethyl)thio]-2,4,6,8-tetrathianonane-1,9-dithiol and 1,1',1''-[methylidynetris(thio)]tris[methanethiol] (9CI) (CA INDEX NAME)

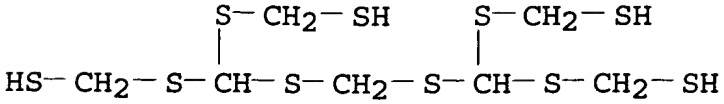
CM 1

CRN 614753-26-3
CMF C10 H22 S14



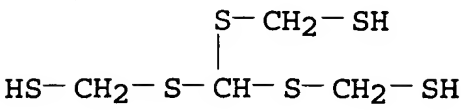
CM 2

CRN 568565-58-2
CMF C7 H16 S10



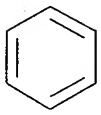
CM 3

CRN 568565-57-1
CMF C4 H10 S6



CM 4

CRN 25854-16-4
CMF C10 H8 N2 O2
CCI IDS

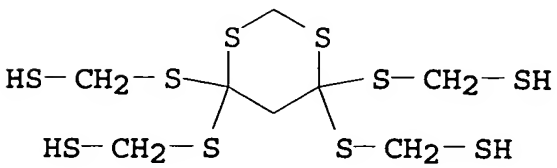


2 [D1—CH_2—NCO]

RN 614753-29-6 HCA
CN Methanethiol, [1,3-dithiane-4,6-diylidenetetrakis(thio)]tetrakis-, polymer with bis(isocyanatomethyl)benzene, [[2-(1,3-dithietan-2-yl)ethylidene]bis(thio)]bis[methanethiol] and [1,3-propanediylidenetetrakis(thio)]tetrakis[methanethiol] (9CI) (CA INDEX NAME)

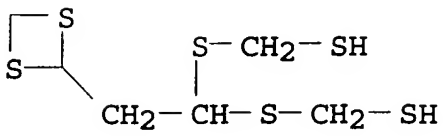
CM 1

CRN 614753-28-5
CMF C8 H16 S10



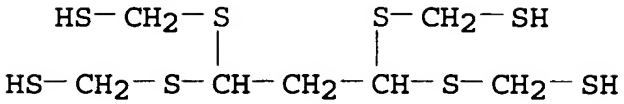
CM 2

CRN 574615-99-9
CMF C6 H12 S6



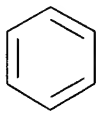
CM 3

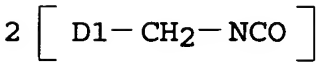
CRN 363138-81-2
CMF C7 H16 S8



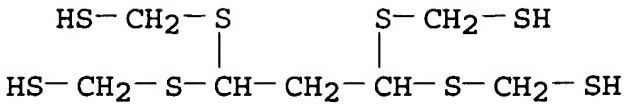
CM 4

CRN 25854-16-4
CMF C10 H8 N2 O2
CCI IDS

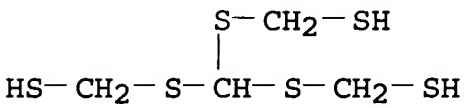




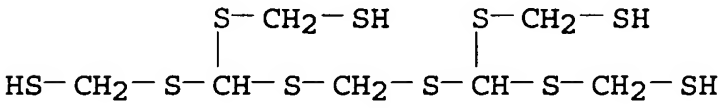
IT **363138-81-2P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane
568565-57-1P 568565-58-2P 574615-99-9P
614753-26-3P 614753-28-5P
(manuf. of polythiols and polymn. with polyisocyanates for thiourethane optical materials)
RN 363138-81-2 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis- (9CI) (CA INDEX NAME)



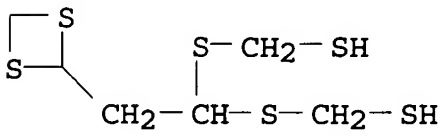
RN 568565-57-1 HCA
CN Methanethiol, 1,1',1''-[methylidynetris(thio)]tris- (9CI) (CA INDEX NAME)



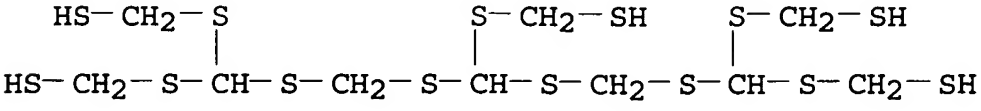
RN 568565-58-2 HCA
CN 2,4,6,8-Tetrathianonane-1,9-dithiol, 3,7-bis[(mercaptomethyl)thio]- (9CI) (CA INDEX NAME)



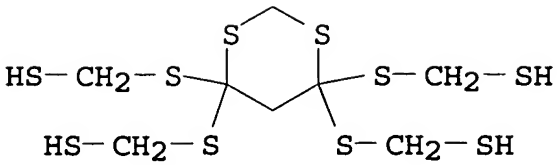
RN 574615-99-9 HCA
CN Methanethiol, [[2-(1,3-dithietan-2-yl)ethylidene]bis(thio)]bis- (9CI) (CA INDEX NAME)



RN 614753-26-3 HCA
CN 2,4,6,8,10,12-Hexathiatridecane-1,13-dithiol, 3,7,11-tris[(mercaptomethyl)thio]- (9CI) (CA INDEX NAME)

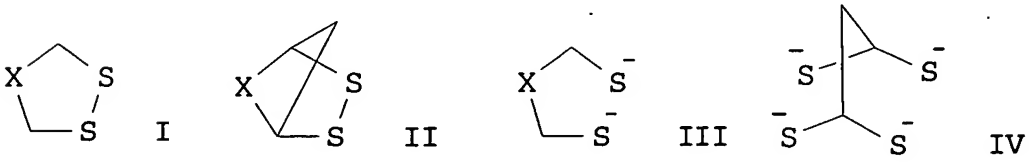


RN 614753-28-5 HCA
CN Methanethiol, [1,3-dithiane-4,6-diylidenetetrakis(thio)]tetrakis- (9CI) (CA INDEX NAME)



IC ICM C08G018-38
ICS C07D339-00; C07D339-08; G02B001-04
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 73
IT Lenses
Optical materials
Polymerization
Refractive index
(manuf. of polythiols and polymn. with polyisocyanates for thiourethane optical materials)
IT **614753-27-4P 614753-29-6P**
(manuf. of polythiols and polymn. with polyisocyanates for thiourethane optical materials)
IT **363138-81-2P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane
568565-57-1P 568565-58-2P 574615-99-9P
614753-26-3P 614753-28-5P
(manuf. of polythiols and polymn. with polyisocyanates for thiourethane optical materials)

L28 ANSWER 16 OF 31 HCA COPYRIGHT 2006 ACS on STN
139:171112 Cyclic disulfide compound, process of producing the same and optical product comprising the same. Okubo, Tsuyoshi; Takamatsu, Ken (Hoya Corporation, Japan). Eur. Pat. Appl. EP 1334974 A1 20030813, 23 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK. (English). CODEN: EPXXDW. APPLICATION: EP 2003-2585 20030207. PRIORITY: JP 2002-31293 20020207.
GI



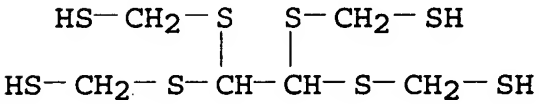
AB A cyclic compd. contg. a structure represented by I and II (X is a

carbon and/or sulfur chain as a skeleton, inclusive of cyclic ones and the no. of element constituting X is 1-4) and having a sulfur content = 50-85 wt%. A cyclic disulfide intermediate having a structure represented by III or IV is also described. An optical product comprising a polymer obtained from a monomer of I or II is also described. The optical product may have high **refractive** index and transparency.

IT **363138-82-3P**
(cyclic disulfide compd. and optical product comprising the same)

RN 363138-82-3 HCA

CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis- (9CI) (CA INDEX NAME)



IC ICM C07D495-08
ICS C07D409-04; C07D495-04; C08G075-14; C08G075-16; G02B001-04; G02B005-00; G02B003-00; C07C321-14; C07D339-00; C07D341-00

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 28, 38

IT 6192-52-5P, p-Toluenesulfonic acid monohydrate **363138-82-3P**
577778-15-5P, 1,1,3,3-Propanetetrathiol 577778-17-7P
577779-12-5P 577779-13-6P, 6,6'-Bi-1,3,5,7,2-tetrathiaplumbocane
(cyclic disulfide compd. and optical product comprising the same)

L28 ANSWER 17 OF 31 HCA COPYRIGHT 2006 ACS on STN

139:165350 Polythiol compounds for lenses with a high **refractive** index. Tanaka, Mamoru; Kuma, Shigetoshi; Kobayashi, Seiichi; Kanemura, Yoshinobu (Mitsui Chemicals, Inc., Japan). U.S. Pat. Appl. Publ. US 2003149230 A1 20030807, 14 pp., Cont.-in-part of U.S. Ser. No. 817,161. (English). CODEN: USXXCO. APPLICATION: US 2002-316180 20021211. PRIORITY: JP 2000-86434 20000327; JP 2000-86436 20000327; US 2001-817161 20010327.

AB The invention relates to a polymerizable compn. for a lens with a high **refractive** index which comprises at least one polythiol compd. of R(SH2SH)n (R = org. residue except an arom. group; n.gtoreq.1; having at least 2 intramol. SH groups) and at least one compd. having an intramol. functional group which can react with a mercapto group; a resin prepd. by polymg. the compn.; an optical element and a lens made of the resin; and a process for prepg. a thiol compd. The thiol compd. is made by the steps of reacting HSR1(SR2)m (m.gtoreq.1; R1 = an arom., aliph., alicyclic or heterocyclic org. residue or aliph., alicyclic or heterocyclic org. residue with an arom. ring or S atom in its chain; R2 = protective

group) with a compd. having a functional group which can react with a mercapto group, and then converting -SR2 into -SH. Thus, to 44.7 g of bis(isocyanatomethyl)sulfide were added 30 mg of dibutyltin dichloride as a catalyst, 150 mg of Zelec UN (acidic alkyl phosphate) as an internal mold release agent and 50 mg of VIOSORBO 583 as a UV absorber to give a mixed soln. To the soln. was added 55.3 g of CH2[CH(SCH2SH)2]2, and the mixt. was sufficiently mixed to give a monomer mixt. After degassing at 0.6 kPa for 1 h, a part of the monomer mixt. was injected into a lens mold, gradually heated from 40.degree. to 130.degree. and cured for 20 h. After cooling, the glass mold was removed to give a lens. The lens was colorless and transparent, and turbidity was not obsd. when passing light through the lens using a slide projector in a dark room. It exhibited good optical properties [**refractive** index (nd): 1.705 and Abbe no. (nd): 32]; and good heat resistance (Tg point: 107.8.degree.). Its impact resistance was rated to A.

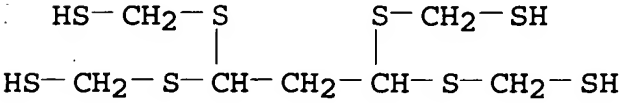
IT **363138-85-6P 363138-86-7P 363138-87-8P,** Bis(isocyanatomethyl)sulfide-1,1,2,2-tetrakis(mercaptomethylthio)ethane copolymer **363138-88-9P,** 1,1,2,2-Tetrakis(mercaptomethylthio)ethane-m-xylylene diisocyanate copolymer (lens; manuf. of polythiol compds. for lenses with a high **refractive** index)

RN 363138-85-6 HCA

CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with thiobis[isocyanatomethane] (9CI) (CA INDEX NAME)

CM 1

CRN 363138-81-2
CMF C7 H16 S8



CM 2

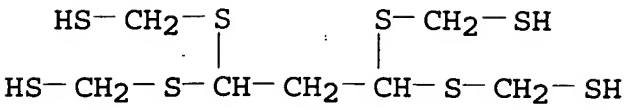
CRN 149683-00-1
CMF C4 H4 N2 O2 S

RN 363138-86-7 HCA

CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis-, polymer with 1,3-bis(isocyanatomethyl)benzene (9CI) (CA INDEX NAME)

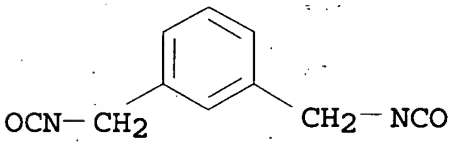
CM 1

CRN 363138-81-2
CMF C7 H16 S8



CM 2

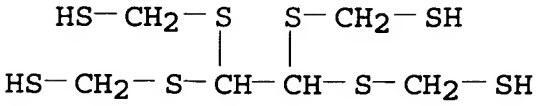
CRN 3634-83-1
CMF C10 H8 N2 O2



RN 363138-87-8 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer with thiobis[isocyanatomethane] (9CI) (CA INDEX NAME)

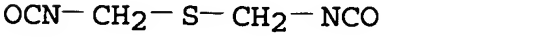
CM 1

CRN 363138-82-3
CMF C6 H14 S8



CM 2

CRN 149683-00-1
CMF C4 H4 N2 O2 S

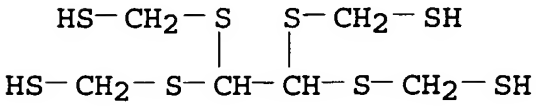


RN 363138-88-9 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis-, polymer

with 1,3-bis(isocyanatomethyl)benzene (9CI) (CA INDEX NAME)

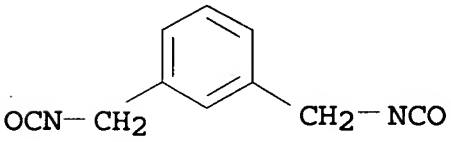
CM 1

CRN 363138-82-3
CMF C6 H14 S8

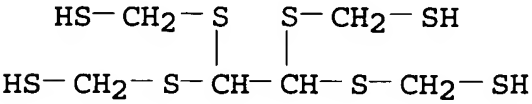


CM 2

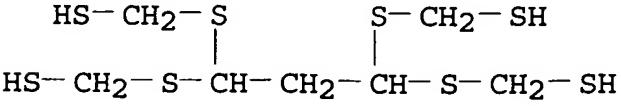
CRN 3634-83-1
CMF C10 H8 N2 O2



IT **363138-82-3P**, 1,1,2,2-Tetrakis(mercaptomethylthio)ethane (manuf. of polythiol compds. for lenses with a high **refractive** index)
RN 363138-82-3 HCA
CN Methanethiol, [1,2-ethanediylidenetetrakis(thio)]tetrakis- (9CI) (CA INDEX NAME)

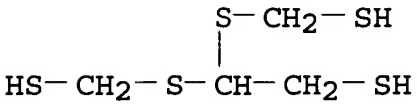


IT **363138-81-2P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane (monomer; manuf. of polythiol compds. for lenses with a high **refractive** index)
RN 363138-81-2 HCA
CN Methanethiol, [1,3-propanediylidenetetrakis(thio)]tetrakis- (9CI) (CA INDEX NAME)

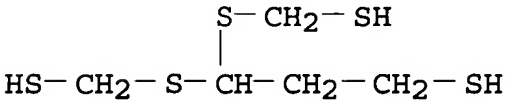


IT **574615-78-4 574615-81-9 574615-85-3**
574615-89-7 574615-93-3 574615-99-9
(monomer; manuf. of polythiol compds. for lenses with a high **refractive** index)

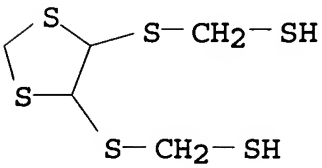
RN 574615-78-4 HCA
CN Ethanethiol, 2,2-bis[(mercaptomethyl)thio]- (9CI) (CA INDEX NAME)



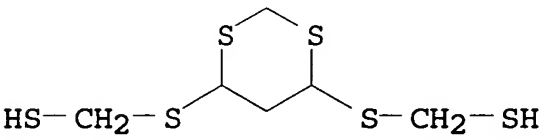
RN 574615-81-9 HCA
CN 1-Propanethiol, 3,3-bis[(mercaptomethyl)thio]- (9CI) (CA INDEX NAME)



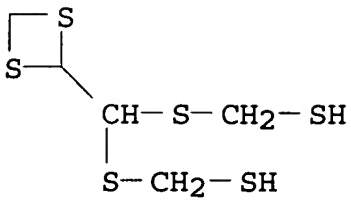
RN 574615-85-3 HCA
CN Methanethiol, [1,3-dithiolane-4,5-diylbis(thio)]bis- (9CI) (CA INDEX NAME)



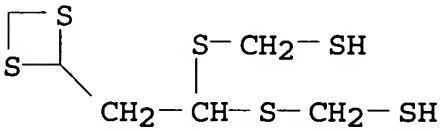
RN 574615-89-7 HCA
CN Methanethiol, [1,3-dithiane-4,6-diylbis(thio)]bis- (9CI) (CA INDEX NAME)



RN 574615-93-3 HCA
CN Methanethiol, [(1,3-dithietan-2-ylmethylene)bis(thio)]bis- (9CI) (CA INDEX NAME)



RN 574615-99-9 HCA
CN Methanethiol, [[2-(1,3-dithietan-2-yl)ethylidene]bis(thio)]bis- (9CI) (CA INDEX NAME)

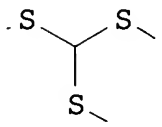


IC ICM C08G075-04
INCL 528374000
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 73
ST transparent high **refractive** index lens polythiol polymer
IT Lenses
(manuf. of polythiol compds. for lenses with a high **refractive** index)
IT Polyurethanes, preparation
(thio-; manuf. of polythiol compds. for lenses with a high **refractive** index)
IT **363138-85-6P 363138-86-7P 363138-87-8P**, Bis(isocyanatomethyl)sulfide-1,1,2,2-tetrakis(mercaptomethylthio)ethane copolymer **363138-88-9P**, 1,1,2,2-Tetrakis(mercaptomethylthio)ethane-m-xylylene diisocyanate copolymer
(lens; manuf. of polythiol compds. for lenses with a high **refractive** index)
IT 2506-35-6P, Bis(acetylthio)methane 78872-79-4P, Acetylthiomethylthiol **363138-82-3P**, 1,1,2,2-Tetrakis(mercaptomethylthio)ethane
(manuf. of polythiol compds. for lenses with a high **refractive** index)
IT 102-52-3, 1,1,3,3-Tetramethoxypropane 2517-44-4, 1,1,2,2-Tetramethoxyethane 34832-35-4, Sodium thioacetate
(manuf. of polythiol compds. for lenses with a high **refractive** index)
IT **363138-81-2P**, 1,1,3,3-Tetrakis(mercaptomethylthio)propane
(monomer; manuf. of polythiol compds. for lenses with a high **refractive** index)

IT **574615-78-4 574615-81-9 574615-85-3**
574615-89-7 574615-93-3 574615-99-9
(monomer; manuf. of polythiol compds. for lenses with a high **refractive** index)

L28 ANSWER 18 OF 31 HCA COPYRIGHT 2006 ACS on STN
139:134620 Polythiols and their preparation, polymerizable compositions, resins, optical devices and lenses. Funaya, Muneto; Tanaka, Mamoru; Kuma, Shigenori; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2003212843 A2 20030730, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-5809 20020115.

GI



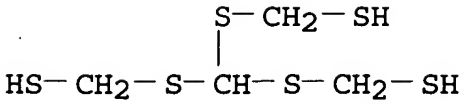
I

AB The polythiols have .gtoreq.1 structure unit I and .gtoreq.2 SH and are prepd. by reacting SH of thiol compds. bearing .gtoreq.2 SH with formic acid and/or formic acid derivs. Compns. contg. the polythiols and optionally compds. bearing .gtoreq.1 functional groups reactive with SH. The compns. are polymd. to give resins showing high **refractive** index and good heat and impact resistances, useful for optical devices, esp. eyeglass lenses. Thus, 117.7 g tri-Me orthoformate was reacted with 200.0 g methanedithiol at 20.degree. in PhMe in the presence of p-toluenesulfonic acid gave 122.5 g of a polythiol mixt. contg. tris(mercaptomethylthio)methane and 3,7-bis(mercaptomethylthio)-1,9-dimercapto-2,4,6,8-tetrathianonane. The mixt. (52.8 g) was mixed with 47.2 g xylylene diisocyanate which had been premixed with Bu2SnCl2, Zelec UN (internal mold-releasing agent, acidic alkyl phosphate), and Biosorb 583 (UV absorber) to give a monomer blend, de-aired, and cured in a lens mold at 120.degree. to give a transparent colorless lens having **refractive** index 1.705, Abbe's no. 30, Tg 97.8, and good impact resistance.

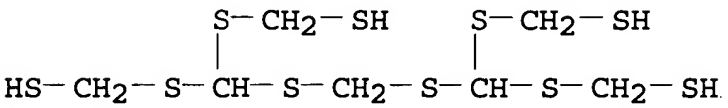
IT **568565-57-1P 568565-58-2P**, 3,7-Bis(mercaptomethylthio)-1,9-dimercapto-2,4,6,8-tetrathianonane
(prepn. of polythiols and their polymerizable compns. and resins for high-**refractive** index optical devices and lenses)

RN 568565-57-1 HCA

CN Methanethiol, 1,1',1''-[methylidynetris(thio)]tris- (9CI) (CA INDEX NAME)



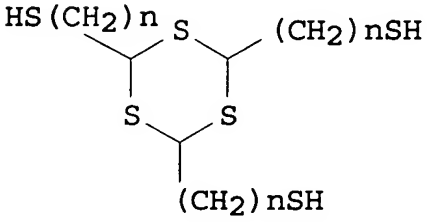
RN 568565-58-2 HCA
CN 2,4,6,8-Tetrathianonane-1,9-dithiol, 3,7-bis[(mercaptomethyl)thio]- (9CI) (CA INDEX NAME)



IC ICM C07C321-14
ICS C07C319-14; C08G018-38; G02B001-04
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 73
ST polythiol resin high **refractive** index lens; optical device polythiol prepn polymn resin
IT Thiols, uses
(polymers; prepn. of polythiols and their polymerizable compns. and resins for high-**refractive** index optical devices and lenses)
IT Thiols, preparation
(polythiols; prepn. of polythiols and their polymerizable compns. and resins for high-**refractive** index optical devices and lenses)
IT Eyeglass lenses
Lenses
Optical instruments
(prepn. of polythiols and their polymerizable compns. and resins for high-**refractive** index optical devices and lenses)
IT **568565-57-1P 568565-58-2P**, 3,7-Bis(mercaptomethylthio)-1,9-dimercapto-2,4,6,8-tetrathianonane
(prepn. of polythiols and their polymerizable compns. and resins for high-**refractive** index optical devices and lenses)
IT 25854-16-4DP, Xylylene diisocyanate, polymer with polythiols
(prepn. of polythiols and their polymerizable compns. and resins for high-**refractive** index optical devices and lenses)
IT 64-18-6, Formic acid, reactions 64-18-6D, Formic acid, ester, orthoester, orthotrithioester 149-73-5, Trimethyl orthoformate 4472-10-0, Dithioformic acid 4472-10-0D, Dithioformic acid, ester, orthoester, orthotrithioester 6725-64-0, Methanedithiol 16890-80-5, Thioformic acid 16890-80-5D, Thioformic acid, ester, orthoester, orthotrithioester
(prepn. of polythiols and their polymerizable compns. and resins

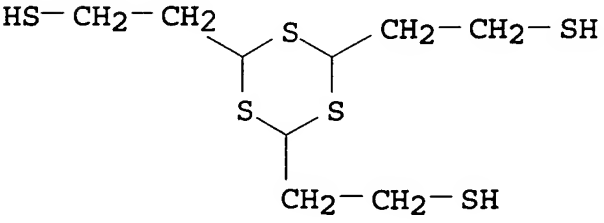
for high-**refractive** index optical devices and lenses)

L28 ANSWER 19 OF 31 HCA COPYRIGHT 2006 ACS on STN
139:7356 Thiols as materials for heat-resistant transparent lenses with high **refractive** index and Abbe number, and their manufacture. Okubo, Takeshi; Takamatsu, Takeshi (Hoya Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2003160581 A2 20030603, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-362377 20011128.
GI

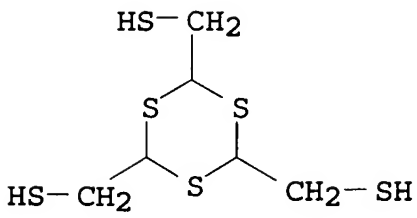


I

AB Thiols I (n = 1, 2) are manufd. via 2,4,6-trimethylene- or trivinyl-1,3,5-trithiane. Thus, 2,4,6-trimethylene-1,3,5-trithiane was reacted with AcSH in the presence of AIBN, then reacted with LiAlH4 to give I (n = 1), which was polymd. with m-xylylene diisocyanate in a mold to give a transparent lens with nD 1.71, .nu.D 36, and heat resistance 132.degree..
IT **4508-23-0P**, 1,3,5-Trithiane-2,4,6-triethanethiol
404871-87-0P, 1,3,5-Trithiane-2,4,6-trimethanethiol
(manuf. of thiols as materials for heat-resistant transparent lenses with high **refractive** index and Abbe no.)
RN 4508-23-0 HCA
CN 1,3,5-Trithiane-2,4,6-triethanethiol (9CI) (CA INDEX NAME)



RN 404871-87-0 HCA
CN 1,3,5-Trithiane-2,4,6-trimethanethiol (9CI) (CA INDEX NAME)



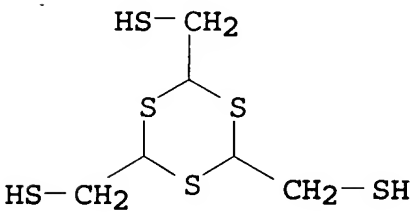
IT **404871-96-1P 533932-15-9P 533932-18-2P**
535991-85-6P 535991-86-7P
(manuf. of thiols as materials for heat-resistant transparent lenses with high **refractive** index and Abbe no.)

RN 404871-96-1 HCA

CN 1,3,5-Trithiane-2,4,6-trimethanethiol, polymer with 1,3-bis(isocyanatomethyl)benzene (9CI) (CA INDEX NAME)

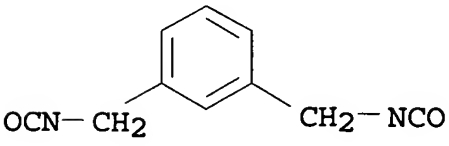
CM 1

CRN 404871-87-0
CMF C6 H12 S6



CM 2

CRN 3634-83-1
CMF C10 H8 N2 O2

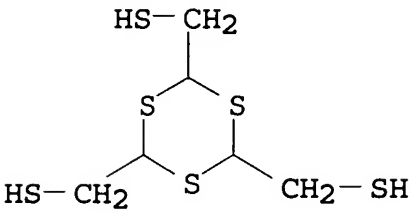


RN 533932-15-9 HCA

CN 1,3,5-Trithiane-2,4,6-trimethanethiol, polymer with bis[(isocyanatomethyl)thio]methane and 1,4-dithiane-2,5-dimethanethiol (9CI) (CA INDEX NAME)

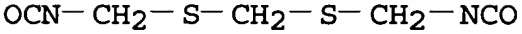
CM 1

CRN 404871-87-0
CMF C6 H12 S6



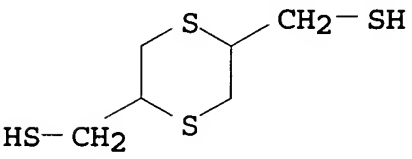
CM 2

CRN 149683-01-2
CMF C5 H6 N2 O2 S2



CM 3

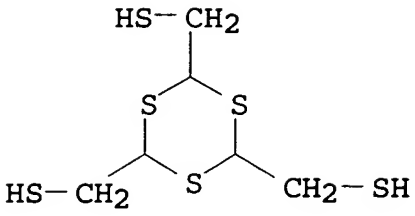
CRN 136122-15-1
CMF C6 H12 S4



RN 533932-18-2 HCA
CN 1,3,5-Trithiane-2,4,6-trimethanethiol, polymer with 1,3-bis(isocyanatomethyl)cyclohexane, methanedithiol and 1,1'-methylenebis[4-isocyanatocyclohexane] (9CI) (CA INDEX NAME)

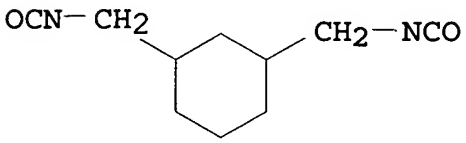
CM 1

CRN 404871-87-0
CMF C6 H12 S6



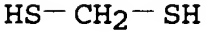
CM 2

CRN 38661-72-2
CMF C10 H14 N2 O2



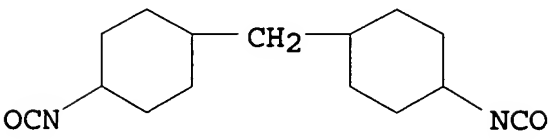
CM 3

CRN 6725-64-0
CMF C H4 S2



CM 4

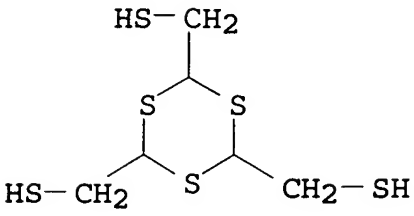
CRN 5124-30-1
CMF C15 H22 N2 O2



RN 535991-85-6 HCA
CN 1,3,5-Trithiane-2,4,6-trimethanethiol, polymer with diethenylbenzene and 1,2,3-propanetrithiol (9CI) (CA INDEX NAME)

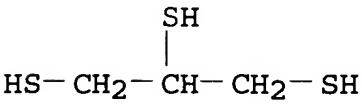
CM 1

CRN 404871-87-0
CMF C6 H12 S6



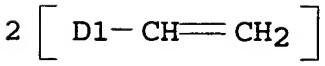
CM 2

CRN 4756-13-2
CMF C3 H8 S3



CM 3

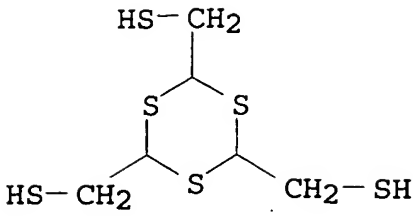
CRN 1321-74-0
CMF C10 H10
CCI IDS



RN 535991-86-7 HCA
CN 2-Propenoic acid, 2-methyl-, 2-isocyanatoethyl ester, polymer with 1,3,5-trithiane-2,4,6-trimethanethiol (9CI) (CA INDEX NAME)

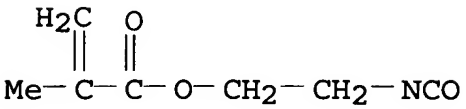
CM 1

CRN 404871-87-0
CMF C6 H12 S6



CM 2

CRN 30674-80-7
CMF C7 H9 N O3



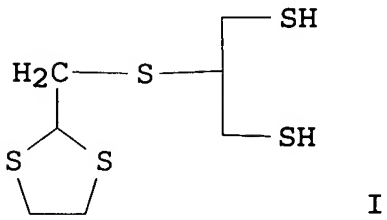
IC ICM C07D341-00
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 28, 38, 73
ST thiol manuf methylenetrithiane vinyltrithiane intermediate; thiopolyurethane heat resistance transparency lens **refractive** index
IT Heat-resistant materials
Lenses
Transparent materials
(manuf. of thiols as materials for heat-resistant transparent lenses with high **refractive** index and Abbe no.)
IT Polythioethers
(polythiourethane-; manuf. of thiols as materials for heat-resistant transparent lenses with high **refractive** index and Abbe no.)
IT Polyurethanes, preparation
(thio-, polythioether-; manuf. of thiols as materials for heat-resistant transparent lenses with high **refractive** index and Abbe no.)
IT Polyurethanes, preparation
(thio-; manuf. of thiols as materials for heat-resistant transparent lenses with high **refractive** index and Abbe no.)
IT **4508-23-0P**, 1,3,5-Trithiane-2,4,6-triethanethiol
10578-59-3P 119015-76-8P **404871-87-0P**,
1,3,5-Trithiane-2,4,6-trimethanethiol
(manuf. of thiols as materials for heat-resistant transparent lenses with high **refractive** index and Abbe no.)
IT **404871-96-1P 533932-15-9P 533932-18-2P**

535991-85-6P 535991-86-7P
(manuf. of thiols as materials for heat-resistant transparent lenses with high **refractive** index and Abbe no.)

IT 107-20-0, 2-Chloroacetaldehyde 507-09-5, Thioacetic acid, reactions 7783-06-4, Hydrogen sulfide, reactions 19434-65-2, 3-Chloropropanal 535991-84-5
(manuf. of thiols as materials for heat-resistant transparent lenses with high **refractive** index and Abbe no.)

L28 ANSWER 20 OF 31 HCA COPYRIGHT 2006 ACS on STN
138:360185 Dithiol compound, polymerizable compositions containing it, optical polymers therefrom, and application of the polymers. Kuma, Shigenori; Tanaka, Mamoru; Funaya, Muneto; Kobayashi, Seiichi (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2003128668 A2 20030508, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-323946 20011022.

GI



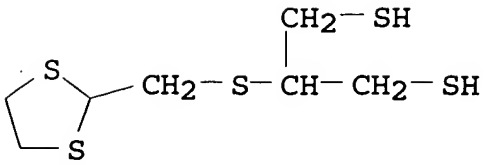
I

AB Dithiol compd. I, polymerizable compns. contg. I and polyiso(thio)cyanates, optical polymers manufd. by polymg. the compns., optical devices made from the polymers, and lenses manufd. from the devices are claimed. **Refractive** index of lenses made of polythiourethanes prepd. using I is higher than that of lenses made of polythiourethanes using 2,5-bis(mercaptomethyl)-1,4-dithiane, and the polymers are esp. useful for eyeglass lenses.

IT **519177-12-9P**
(prepn. of [mercapto(mercaptomethyl)thiabutyl]dithiolane as monomer for polythiourethanes and lenses with high **refractive** index prepd. from the polymers)

RN 519177-12-9 HCA

CN 1,3-Propanedithiol, 2-[(1,3-dithiolan-2-ylmethyl)thio]- (9CI) (CA INDEX NAME)



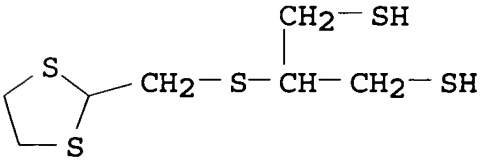
IT **519177-18-5P**
(prepn. of [mercapto(mercaptomethyl)thiabutyl]dithiolane as monomer for polythiourethanes and lenses with high **refractive** index prepd. from the polymers)

RN 519177-18-5 HCA

CN 1,3-Propanedithiol, 2-[(1,3-dithiolan-2-ylmethyl)thio]-, polymer with 1,3-bis(isocyanatomethyl)benzene and 2,3-bis[(2-mercaptoethyl)thio]-1-propanethiol (9CI) (CA INDEX NAME)

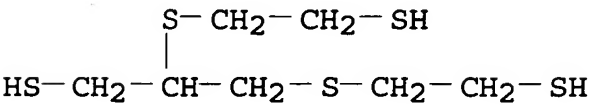
CM 1

CRN 519177-12-9
CMF C7 H14 S5



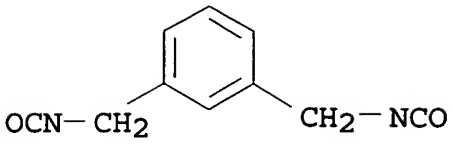
CM 2

CRN 131538-00-6
CMF C7 H16 S5



CM 3

CRN 3634-83-1
CMF C10 H8 N2 O2



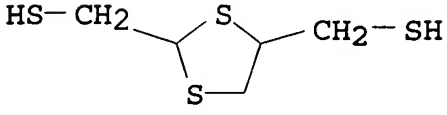
IC ICM C07D339-06
ICS C08G018-38; G02B001-04
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 28, 38
ST mercaptomethylthiapropydithiolane polythiourethane lens high **refractive** index; dithiolane mercaptomercaptomethylthiabutyl polythiourethane lens
IT Eyeglass lenses
Optical materials
(prepn. of [mercapto(mercaptomethyl)thiabutyl]dithiolane as monomer for polythiourethanes and lenses with high **refractive** index prepd. from the polymers)
IT Polyurethanes, uses
(thio-; prepn. of [mercapto(mercaptomethyl)thiabutyl]dithiolane as monomer for polythiourethanes and lenses with high **refractive** index prepd. from the polymers)
IT 519177-14-1P 519177-16-3P
(intermediate in monomer prepn.; prepn. of [mercapto(mercaptomethyl)thiabutyl]dithiolane as monomer for polythiourethanes and lenses with high **refractive** index prepd. from the polymers)
IT **519177-12-9P**
(prepn. of [mercapto(mercaptomethyl)thiabutyl]dithiolane as monomer for polythiourethanes and lenses with high **refractive** index prepd. from the polymers)
IT **519177-18-5P**
(prepn. of [mercapto(mercaptomethyl)thiabutyl]dithiolane as monomer for polythiourethanes and lenses with high **refractive** index prepd. from the polymers)
IT 106-89-8, Epichlorohydrin, reactions
(reaction with (mercaptomethyl)dithiolane; prepn. of [mercapto(mercaptomethyl)thiabutyl]dithiolane as monomer for polythiourethanes and lenses with high **refractive** index prepd. from the polymers)
IT 5616-72-8, 2-Mercaptomethyl-1,3-dithiolane
(reaction with epichlorohydrin; prepn. of [mercapto(mercaptomethyl)thiabutyl]dithiolane as monomer for polythiourethanes and lenses with high **refractive** index prepd. from the polymers)

L28 ANSWER 21 OF 31 HCA COPYRIGHT 2006 ACS on STN
137:370466 Acrylic esters containing 1,3-dithiolane linkage and their use for optical materials. Nakamura, Mitsuo; Imai, Masao; Otsuji, Atsuo (Mitsui Chemicals, Inc., Japan). PCT Int. Appl. WO 2002092591 A1 20021121, 104 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2002-JP4695 20020515. PRIORITY: JP 2001-144539 20010515; JP 2001-144540 20010515; JP 2001-266422 20010903; JP 2001-281859 20010917.

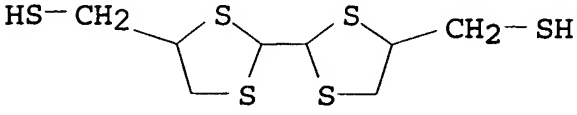
AB Acrylic esters which are polymerizable in a short time and useful for optical resins with good heat, mech. and **refractive** properties are diacrylic esters having dithiolane linkage. Acid condensation of 2,3-dimercapto-1-propanol with glyoxal, treating the resulting 2,2'-bis[(4-hydroxymethyl)dithiolane] with thiourea, hydrolysis of the thiouronium salt, treating the resulting dithiol with 3-chloropropionic acid, and treating with Et3N gave 2,2'-bis[(4-acryloylthiomethyl)dithiolane]. The dithiolane was UV cured with Darocur 1173 in a cell, giving a transparent test piece with **refractive** index 1.681, Abbe no. 34.6, sp. gr. 1.4, and glass temp. 123.degree..

IT **153729-29-4P**, 1,3-Dithiolane-2,4-dimethanethiol
475577-69-6P 475577-70-9P 475577-71-0P
475577-72-1P 475577-98-1P 475577-99-2P
(manuf. of acrylic esters contg. 1,3-dithiolane linkage for optical materials)

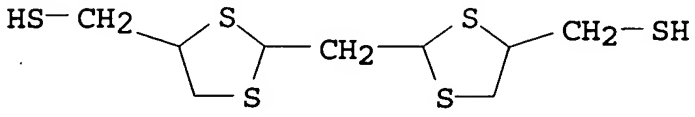
RN 153729-29-4 HCA
CN 1,3-Dithiolane-2,4-dimethanethiol (9CI) (CA INDEX NAME)



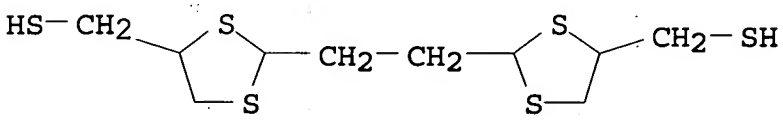
RN 475577-69-6 HCA
CN [2,2'-Bi-1,3-dithiolane]-4,4'-dimethanethiol (9CI) (CA INDEX NAME)



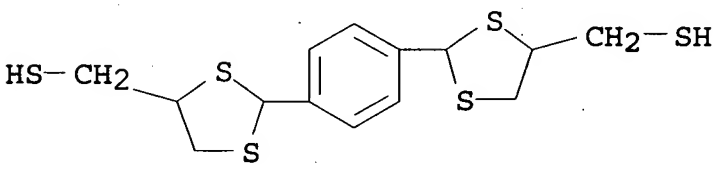
RN 475577-70-9 HCA
CN 1,3-Dithiolane-4-methanethiol, 2,2'-methylenebis- (9CI) (CA INDEX NAME)



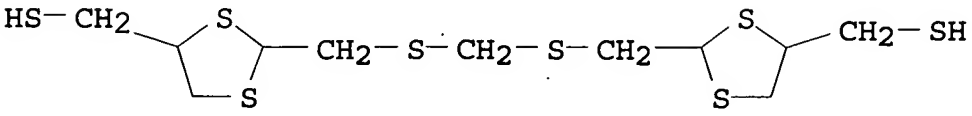
RN 475577-71-0 HCA
CN 1,3-Dithiolane-4-methanethiol, 2,2'-(1,2-ethanediyl)bis- (9CI) (CA INDEX NAME)



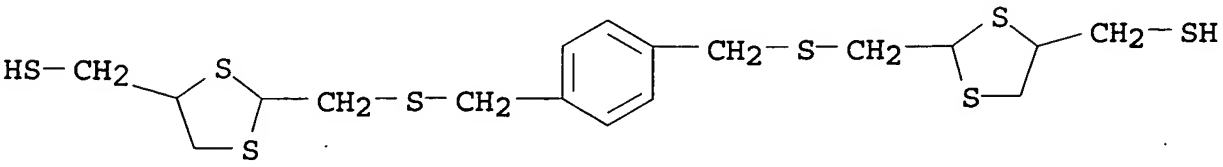
RN 475577-72-1 HCA
CN 1,3-Dithiolane-4-methanethiol, 2,2'-(1,4-phenylene)bis- (9CI) (CA INDEX NAME)



RN 475577-98-1 HCA
CN 1,3-Dithiolane-4-methanethiol, 2,2'-[methylenebis(thiomethylene)]bis- (9CI) (CA INDEX NAME)



RN 475577-99-2 HCA
CN 1,3-Dithiolane-4-methanethiol, 2,2'-[1,4-phenylenebis(methylenethiomethylene)]bis- (9CI) (CA INDEX NAME)



IC ICM C07D339-06
ICS C08F020-38; G02B001-04
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 28, 38, 73
IT 95966-73-7P **153729-29-4P**, 1,3-Dithiolane-2,4-dimethanethiol 475577-62-9P, [2,2'-Bi-1,3-dithiolane]-4,4'-dimethanol 475577-63-0P 475577-65-2P 475577-67-4P 475577-68-5P **475577-69-6P 475577-70-9P** **475577-71-0P 475577-72-1P** 475577-73-2P 475577-74-3P 475577-75-4P 475577-76-5P 475577-77-6P 475577-78-7P 475577-79-8P 475577-87-8P 475577-88-9P 475577-89-0P 475577-90-3P 475577-91-4P 475577-92-5P 475577-93-6P 475577-94-7P 475577-96-9P 475577-97-0P **475577-98-1P 475577-99-2P** 475578-00-8P 475578-01-9P 475578-02-0P 475578-07-5P 475578-08-6P, 1,3-Dithiolane-2,4-dimethanol 475578-09-7P
(manuf. of acrylic esters contg. 1,3-dithiolane linkage for optical materials)

L28 ANSWER 22 OF 31 HCA COPYRIGHT 2006 ACS on STN
136:361629 (Meth)acrylic acid thioesters, their compositions, optical parts manufactured from them with high efficiency, and dimercapto compounds. Okuma, Tadashi; Imai, Masao; Otsuji, Atsuo (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2002128827 A2 20020509, 89 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-331186 20001030.
AB The thioesters, useful for lenses, optical recording media, liq. crystal cells, and optical fibers, are shown as R13CH2:CR12[SC:OCR14(:CH2)]Z2Q1Y1Q2Z1CH:CR9[SC:OCR11(:CH2)]CH2R10 (Q1 = R1-4-substituted phenylene; Q2 = R5-6-substituted phenylene; R1-8 = H, alkyl, alkoxy, nitro, halo; R9,12 = H, alkyl; R10,13 = S-contg. substituent; R11,14 = H, Me; Y1 = single bond, CR15R16; R15,16 = H, alkyl, aryl, O, S, SO2; Z1,2 = O, S). Lenses manufd. by curing the thioesters show good transparency, impact resistance, and **refractive** index.
IT **422319-75-3P 422319-76-4P**
(dimercapto compd.; acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)
RN 422319-75-3 HCA
CN 2-Propanethiol, 1,1'-[(1-methylethylidene)bis(4,1-phenyleneoxy)]bis[3-[(1,3-dithiolan-2-ylmethyl)thio]- (9CI) (CA INDEX NAME)

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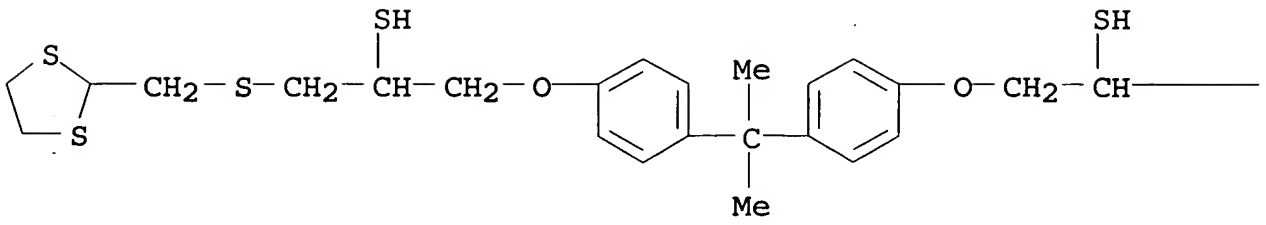
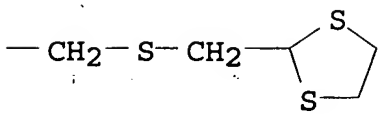
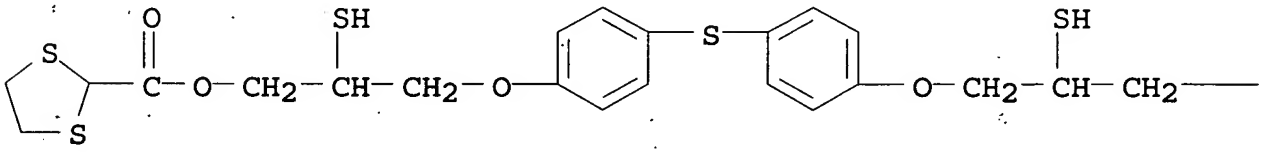


PAGE 1-B



RN 422319-76-4 HCA
CN 1,3-Dithiolane-2-carboxylic acid, thiobis[4,1-phenyleneoxy(2-mercapto-3,1-propanediyl)] ester (9CI) (CA INDEX NAME)

PAGE 1-A



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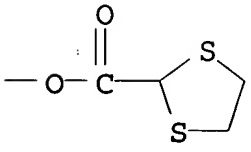

IT **422319-90-2 422319-91-3 422319-95-7**
422319-96-8 422319-98-0 422319-99-1
422320-00-1 422320-01-2 422320-03-4
422320-04-5 422320-05-6 422320-08-9
422320-09-0
(dimercapto compd.; acrylic acid thioester compns. for optical

parts with high **refractive** index and impact resistance)

RN 422319-90-2 HCA

CN 2-Propanethiol, 1,1'-[(3,3',5,5'-tetramethyl[1,1'-biphenyl]-4,4'-diyl)bis(thio)]bis[3-[[2-(1,3-dithiolan-2-yl)ethyl]thio]- (9CI) (CA INDEX NAME)

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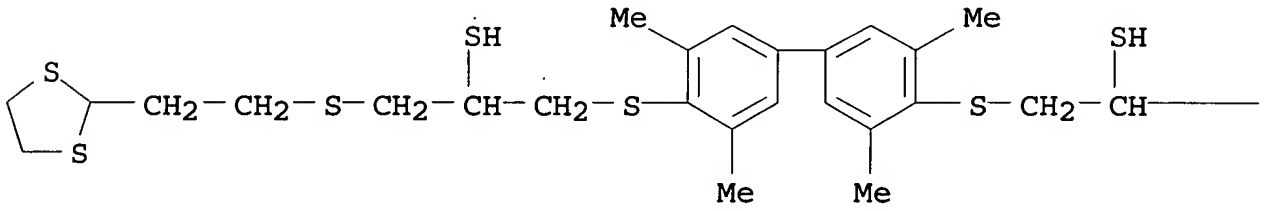

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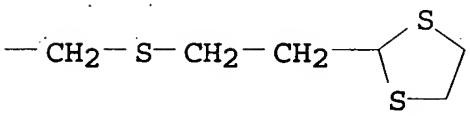

RN 422319-91-3 HCA

CN 1,3-Dithiolane-2-carbothioic acid, S,S'-[(3,3',5,5'-tetramethyl[1,1'-biphenyl]-4,4'-diyl)bis[thio(2-mercapto-3,1-propanediyl)]] ester (9CI) (CA INDEX NAME)

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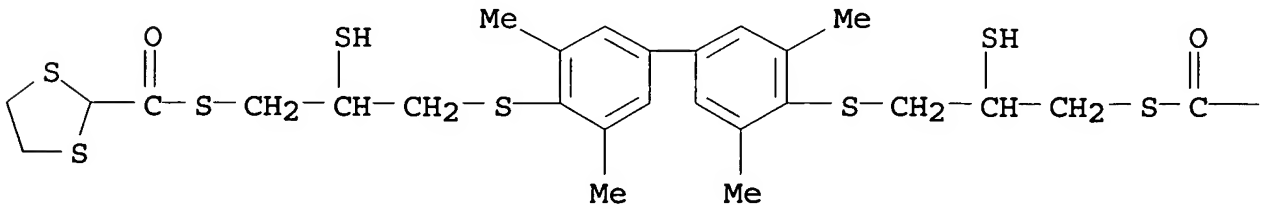

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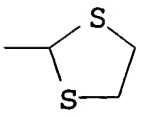

RN 422319-95-7 HCA
CN 2-Propanethiol, 1,1'-[(1-methylethylidene)bis(4,1-phenyleneoxy)]bis[3-(1,3-dithiolan-2-ylmethoxy)- (9CI) (CA INDEX NAME)

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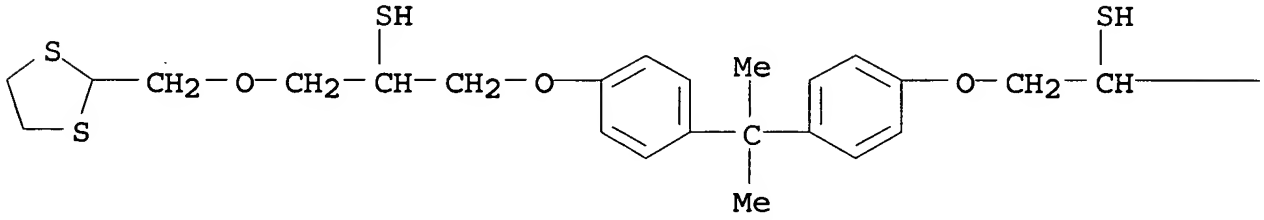

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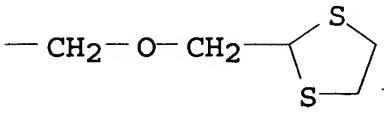

RN 422319-96-8 HCA
CN 2-Propanethiol, 1,1'-[(1-methylethylidene)bis(4,1-phenyleneoxy)]bis[3-[[2-(1,3-dithiolan-2-yl)ethyl]thio]- (9CI) (CA INDEX NAME)

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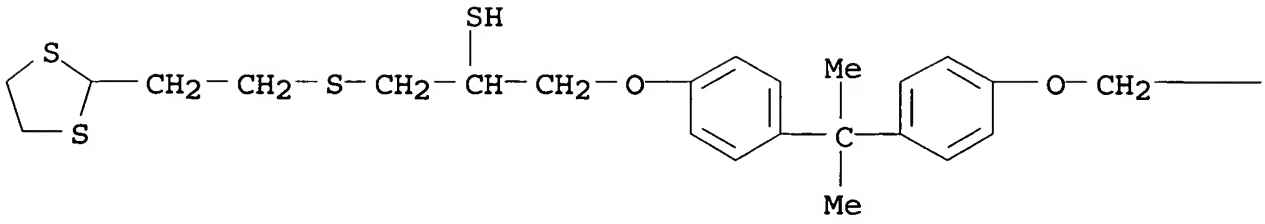

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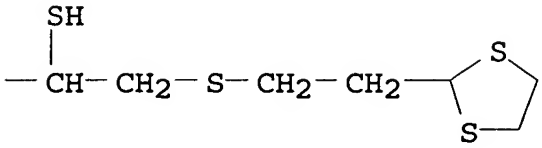

RN 422319-98-0 HCA
CN 2-Propanethiol, 1,1'-[(1-methylethylidene)bis(4,1-phenylenethio)]bis[3-[(1,3-dithiolan-2-ylmethyl)thio]- (9CI) (CA INDEX NAME)

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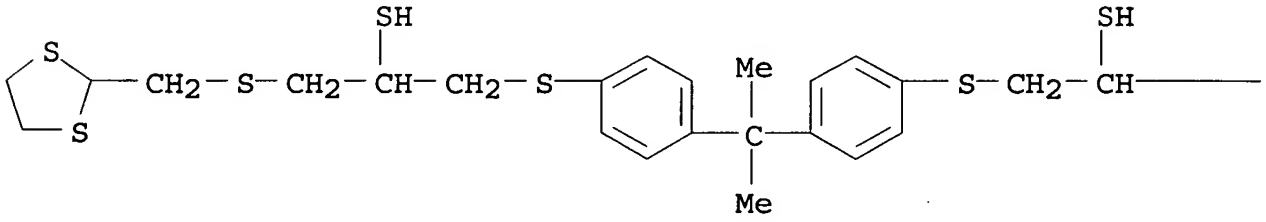

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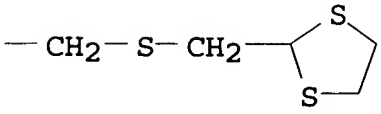

RN 422319-99-1 HCA
CN 2-Propanethiol, 1,1'-[(1-methylethylidene)bis(4,1-phenylenethio)]bis[3-[[2-(1,3-dithiolan-2-yl)ethyl]thio]- (9CI) (CA

INDEX NAME)

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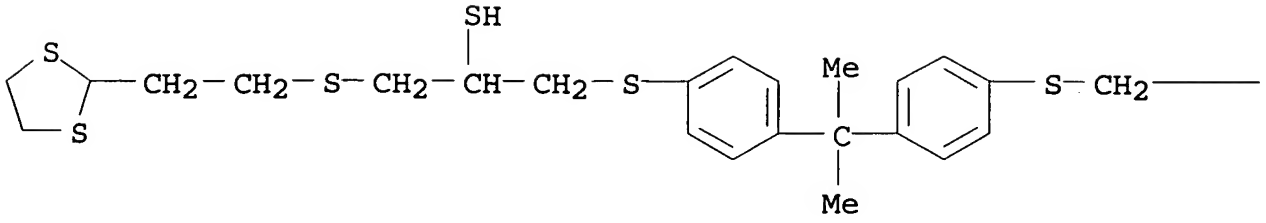

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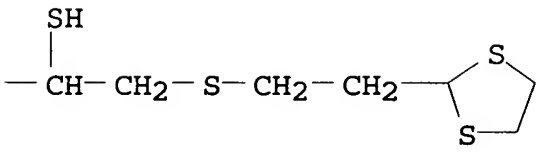
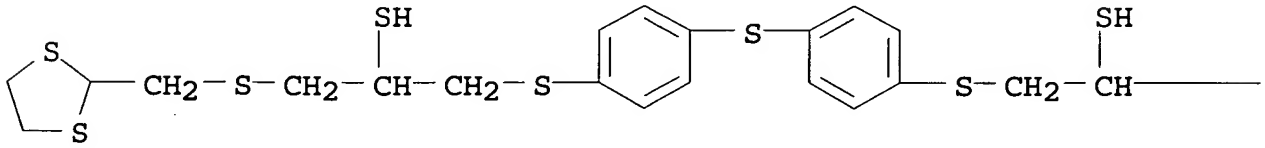
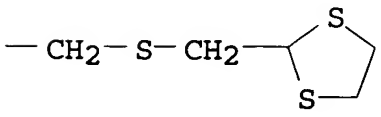


RN 422320-00-1 HCA
CN 2-Propanethiol, 1,1'-[thiobis(4,1-phenylenethio)]bis[3-[(1,3-dithiolan-2-ylmethyl)thio]- (9CI) (CA INDEX NAME)

PAGE 1-A

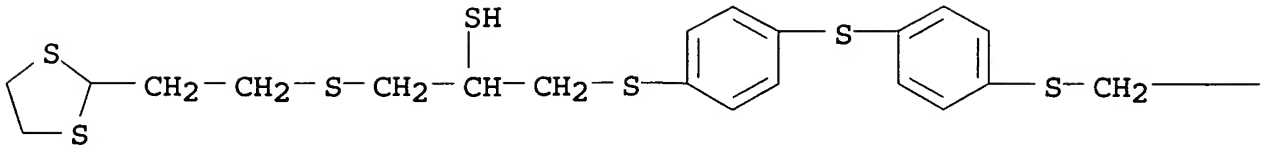


PAGE 1-B

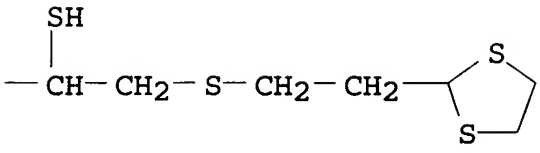


RN 422320-01-2 HCA
CN 2-Propanethiol, 1,1'-[thiobis(4,1-phenylenethio)]bis[3-[[2-(1,3-dithiolan-2-yl)ethyl]thio]- (9CI) (CA INDEX NAME)

PAGE 1-A

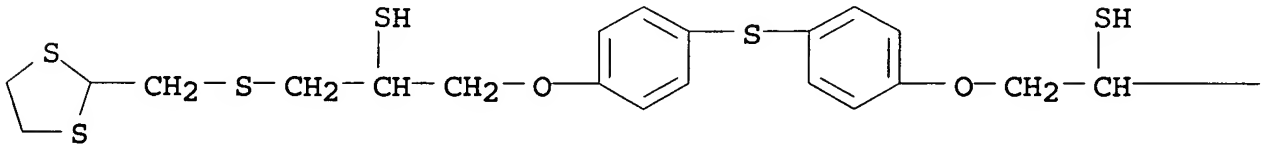


PAGE 1-B

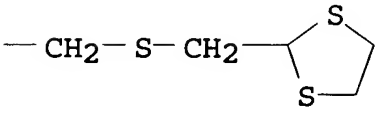


RN 422320-03-4 HCA
CN 2-Propanethiol, 1,1'-[thiobis(4,1-phenyleneoxy)]bis[3-[(1,3-dithiolan-2-ylmethyl)thio]- (9CI) (CA INDEX NAME)

PAGE 1-A

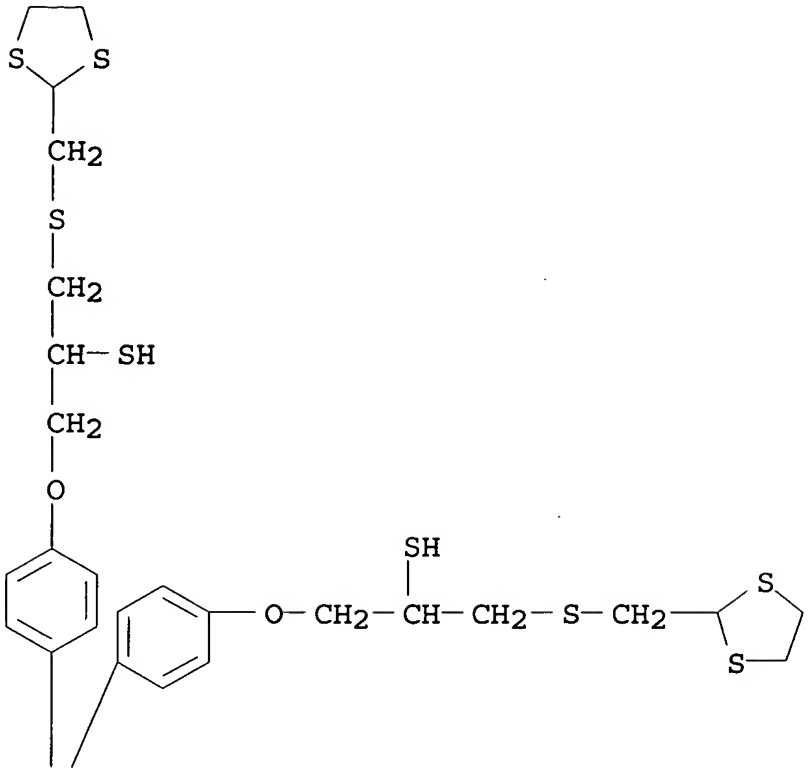


PAGE 1-B

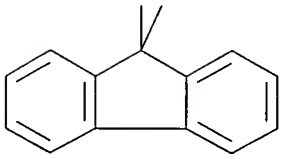


RN 422320-04-5 HCA
CN 2-Propanethiol, 1,1'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[3-[(1,3-dithiolan-2-ylmethyl)thio]- (9CI) (CA INDEX NAME)

PAGE 1-A

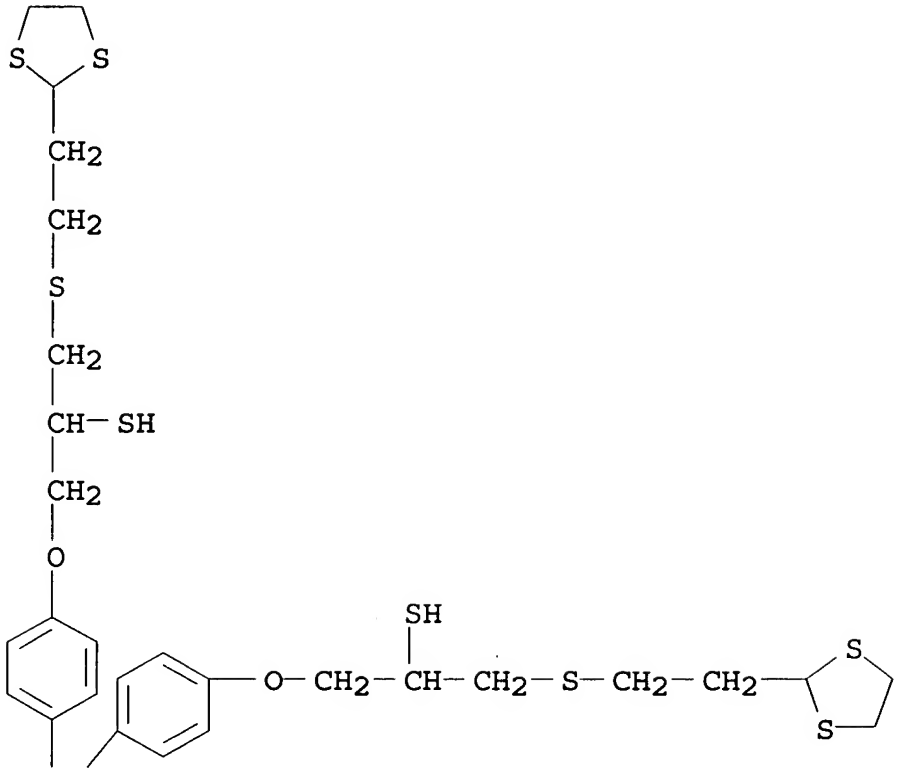


PAGE 2-A

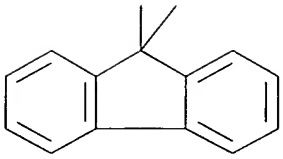


RN 422320-05-6 HCA
CN 2-Propanethiol, 1,1'-[9H-fluoren-9-ylidenebis(4,1-phenyleneoxy)]bis[3-[[2-(1,3-dithiolan-2-yl)ethyl]thio]- (9CI) (CA INDEX NAME)

PAGE 1-A

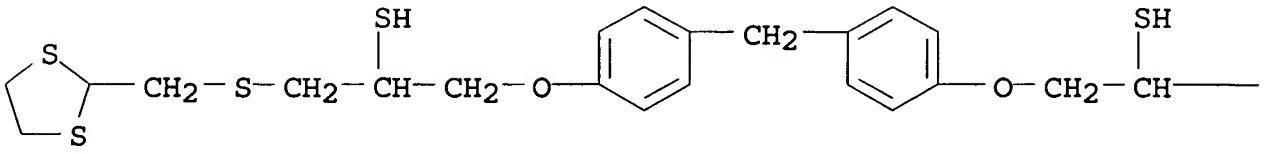


PAGE 2-A

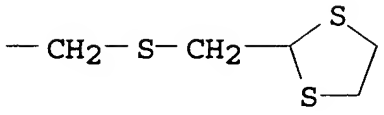


RN 422320-08-9 HCA
CN 2-Propanethiol, 1,1'-[methylenebis(4,1-phenyleneoxy)]bis[3-[(1,3-dithiolan-2-ylmethyl)thio]- (9CI) (CA INDEX NAME)

PAGE 1-A

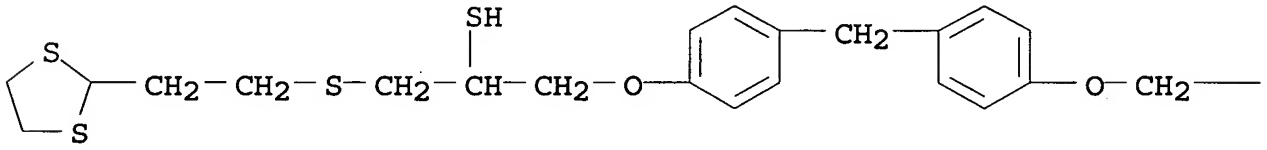


PAGE 1-B

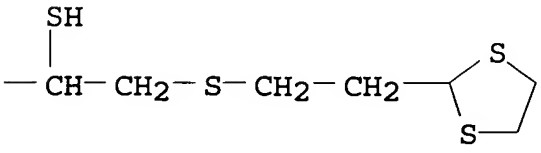


RN 422320-09-0 HCA
CN 2-Propanethiol, 1,1'-[methylenebis(4,1-phenyleneoxy)]bis[3-[[2-(1,3-dithiolan-2-yl)ethyl]thio]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM C08F020-38
ICS C07C321-20; C07C327-22; C07C327-28; C07C327-32; G02B001-04
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 38
ST acrylic thioester monomer optical part transparency; optical lens **refractive** index acrylic polythioester
IT Lenses

Optical materials
(acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)

IT Polyesters, properties
(thio-, acrylic; acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)

IT 126659-18-5P 422319-81-1P 422319-82-2P 422319-83-3P
422319-84-4P 422319-85-5P 422319-86-6P 422319-87-7P
422319-88-8P 422320-31-8P 422320-32-9P 422320-33-0P
422320-34-1P 422320-35-2P 422320-36-3P 422320-37-4P
422320-38-5P 422320-39-6P 422320-40-9P 422320-41-0P
422320-42-1P 422320-43-2P 422320-44-3P 422320-45-4P
422320-46-5P 422320-47-6P 422320-48-7P 422320-49-8P
422320-50-1P
(acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)

IT 422319-77-5P 422319-78-6P 422319-79-7P 422319-80-0P
(acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)

IT 422320-10-3 422320-11-4 422320-12-5 422320-13-6 422320-14-7
422320-15-8 422320-16-9 422320-17-0 422320-18-1 422320-19-2
422320-20-5 422320-21-6 422320-22-7 422320-23-8 422320-25-0
422320-26-1 422320-27-2 422320-28-3 422320-29-4 422320-30-7
(acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)

IT 422319-74-2P **422319-75-3P 422319-76-4P**
(dimercapto compd.; acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)

IT **422319-90-2 422319-91-3** 422319-92-4
422319-93-5 422319-94-6 **422319-95-7 422319-96-8**
422319-97-9 **422319-98-0 422319-99-1**
422320-00-1 422320-01-2 422320-02-3
422320-03-4 422320-04-5 422320-05-6
422320-06-7 422320-07-8 **422320-08-9 422320-09-0**
(dimercapto compd.; acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)

IT 108-98-5, Benzenethiol, reactions 5076-12-0 5616-65-9, 1,3-Dithiolane-2-carboxylic acid 5616-72-8, 2-Mercaptomethyl-1,3-dithiolane 422319-73-1 422319-89-9
(for thioester prepn.; acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)

L28 ANSWER 23 OF 31 HCA COPYRIGHT 2006 ACS on STN
136:361627 (Meth)acrylic acid thioesters, their compositions, optical parts manufactured from them with high efficiency, and dimercapto compounds. Okuma, Tadashi; Imai, Masao; Ootsuji, Atsuo (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2002128826 A2 20020509, 55 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP

2000-320895 20001020.

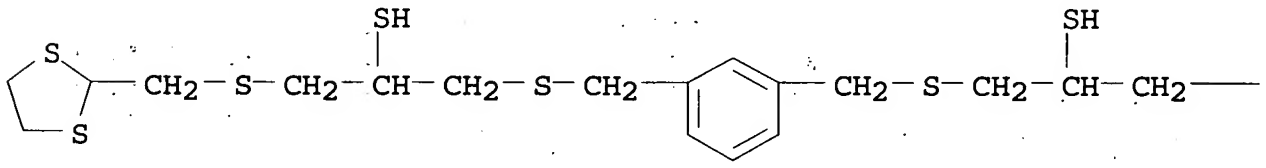
AB The thioesters, useful for lenses, optical recording media, liq. crystal cells, and optical fibers, are shown as R9CH2:CR8[SC:OCR10(:CH2)]Z2CH2QCH2Z1CH:CR5[SC:OCR7(:CH2)]CH2R6 (Q = R1-4-substituted phenylene; R1-4 = H, alkyl, alkoxy, nitro, halo; R5,8 = H, alkyl; R6,9 = S-contg. substituent; R7,10 = H, Me; Z1,2 = O, S). Lenses manufd. by curing the thioesters show good transparency, impact resistance, and **refractive** index.

IT **422311-55-5P 422311-56-6P**
(for thioester prepn.; acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)

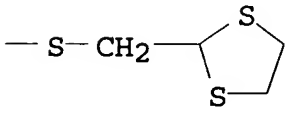
RN 422311-55-5 HCA

CN 2-Propanethiol, 1,1'-[1,3-phenylenebis(methylenethio)]bis[3-[(1,3-dithiolan-2-ylmethyl)thio]- (9CI) (CA INDEX NAME)

PAGE 1-A



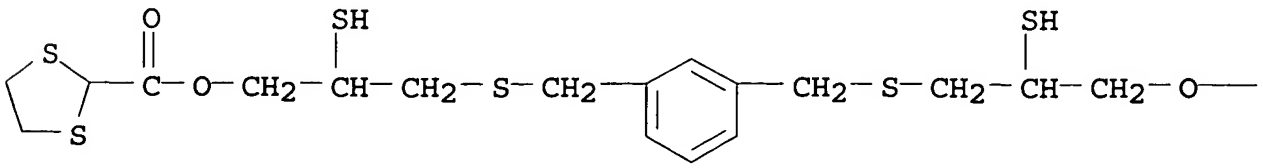
PAGE 1-B



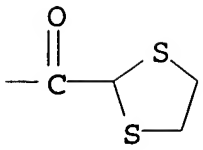
RN 422311-56-6 HCA

CN 1,3-Dithiolane-2-carboxylic acid, 1,3-phenylenebis[methylenethio(2-mercapto-3,1-propanediyl)] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

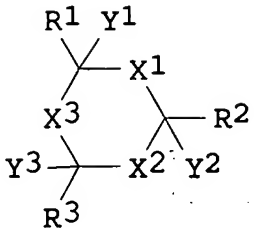


IC ICM C08F020-38
ICS C07C323-19; C07C327-28; C07D277-12; C07D277-16; C07D277-56; C07D333-40; C07D339-06; C07D339-08; C07D341-00; G02B001-04
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 38
ST acrylic thioester monomer optical part transparency; optical lens **refractive** index acrylic polythioester; acrylate dimercapto ester photocuring optical disk
IT Lenses
Optical materials
(acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)
IT Polyesters, properties
(thio-, acrylic; acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)
IT 422311-61-3P 422311-62-4P 422311-63-5P 422311-64-6P 422311-65-7P 422311-66-8P 422311-67-9P 422311-68-0P 422311-69-1P 422311-70-4P
(acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)
IT 422311-57-7P 422311-58-8P 422311-59-9P 422311-60-2P
(acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)
IT 422311-53-3P **422311-55-5P 422311-56-6P**
(for thioester prepn.; acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)
IT 108-98-5, Benzenethiol, reactions 5616-65-9, 1,3-Dithiolane-2-carboxylic acid 5616-72-8, 2-Mercaptomethyl-1,3-dithiolane 422311-52-2 422311-54-4
(for thioester prepn.; acrylic acid thioester compns. for optical parts with high **refractive** index and impact resistance)

L28 ANSWER 24 OF 31 HCA COPYRIGHT 2006 ACS on STN
136:254375 Composite optical material. Yoshimura, Yuichi; Takeuchi, Motoharu (Mitsubishi Gas Chemical Company, Inc., Japan). PCT Int. Appl. WO 2002023230 A1 20020321, 63 pp. DESIGNATED STATES: W: CN, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO

2001-JP7647 20010904. PRIORITY: JP 2000-279176 20000914.

GI



I

AB The invention refers to a high n composite optical materials comprising at least one compd. I [R1-3 = H or C1-10 hydrocarbon; X1-3 = S, Se, or Te; Y1-3 = -Sa-[(CH2)bS]cH; a = 0 - 2; b = 0 - 4; c = 0 - 2], and a compd. capable of reacting with I.

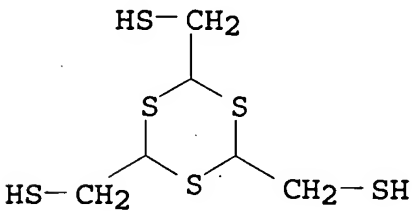
IT **404871-88-1 404871-89-2 404871-96-1 404871-97-2 404871-98-3**
(composite optical material)

RN 404871-88-1 HCA

CN 1,3,5-Trithiane-2,4,6-trimethanethiol, polymer with diethenylbenzene (9CI) (CA INDEX NAME)

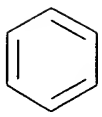
CM 1

CRN 404871-87-0
CMF C6 H12 S6



CM 2

CRN 1321-74-0
CMF C10 H10
CCI IDS

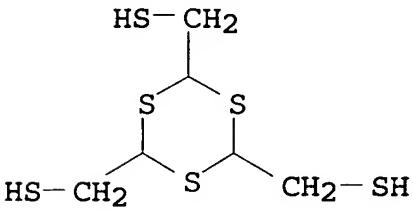


2 [D1—CH═CH$_2$]

RN 404871-89-2 HCA
CN 1,3,5-Trithiane-2,4,6-trimethanethiol, polymer with 2,2'-[1,2-ethanediylbis(thiomethylene)]bis[oxirane] (9CI) (CA INDEX NAME)

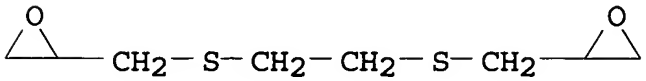
CM 1

CRN 404871-87-0
CMF C6 H12 S6



CM 2

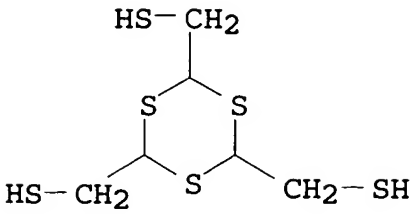
CRN 103296-84-0
CMF C8 H14 O2 S2



RN 404871-96-1 HCA
CN 1,3,5-Trithiane-2,4,6-trimethanethiol, polymer with 1,3-bis(isocyanatomethyl)benzene (9CI) (CA INDEX NAME)

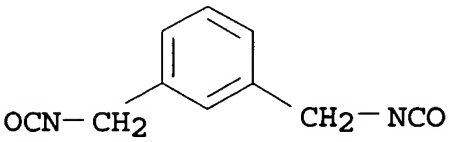
CM 1

CRN 404871-87-0
CMF C6 H12 S6



CM 2

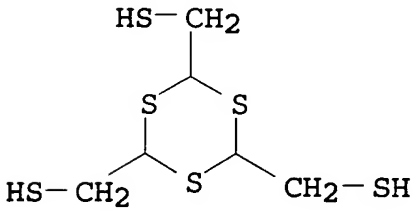
CRN 3634-83-1
CMF C10 H8 N2 O2



RN 404871-97-2 HCA
CN 1,3,5-Trithiane-2,4,6-trimethanethiol, polymer with 2,2'-[thiobis(methylene)]bis[thiirane] (9CI) (CA INDEX NAME)

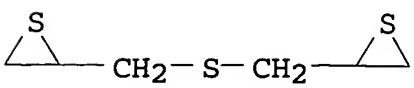
CM 1

CRN 404871-87-0
CMF C6 H12 S6



CM 2

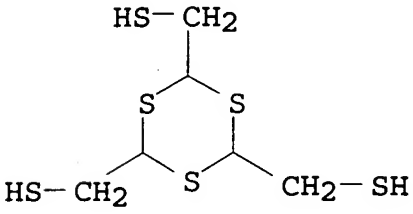
CRN 188829-97-2
CMF C6 H10 S3



RN 404871-98-3 HCA
CN 1,3,5-Trithiane-2,4,6-trimethanethiol, polymer with 1,3-bis(isocyanatomethyl)benzene and 2,2'-[thiobis(methylene)]bis[thiirane] (9CI) (CA INDEX NAME)

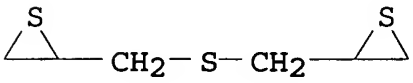
CM 1

CRN 404871-87-0
CMF C6 H12 S6



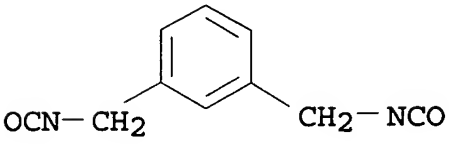
CM 2

CRN 188829-97-2
CMF C6 H10 S3

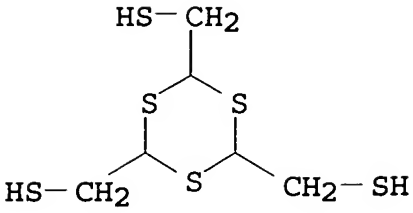


CM 3

CRN 3634-83-1
CMF C10 H8 N2 O2

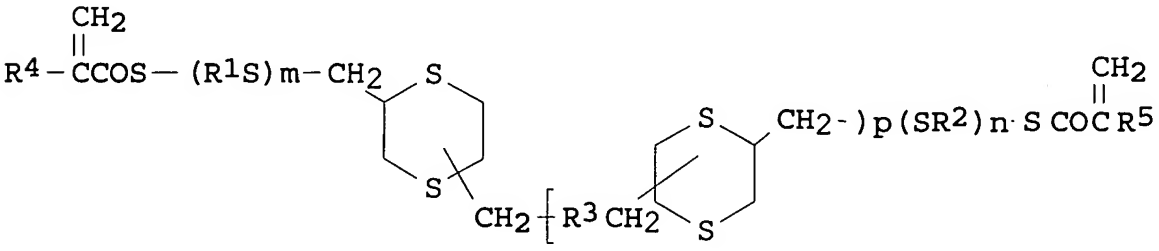


IT **404871-87-0P**, 1,3,5-Trithiane-2,4,6-trimethanethiol (composite optical material)
RN 404871-87-0 HCA
CN 1,3,5-Trithiane-2,4,6-trimethanethiol (9CI) (CA INDEX NAME)



IC ICM G02B001-04
ICS C08G075-04; C08G075-08; C08G018-38
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST composite optical material sulfur **refractive** index
IT **404871-88-1 404871-89-2** 404871-90-5
404871-91-6 404871-92-7 404871-93-8 404871-94-9 404871-95-0
404871-96-1 404871-97-2 404871-98-3
(composite optical material)
IT **404871-87-0P**, 1,3,5-Trithiane-2,4,6-trimethanethiol
(composite optical material)

L28 ANSWER 25 OF 31 HCA COPYRIGHT 2006 ACS on STN
136:135876 Polymerizable thio(meth)acrylates for optical materials. Hara, Tadashi; Mori, Yoshihiro (Tokuyama Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2002030082 A2 20020129, 16 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-218548 20000719.
GI



I

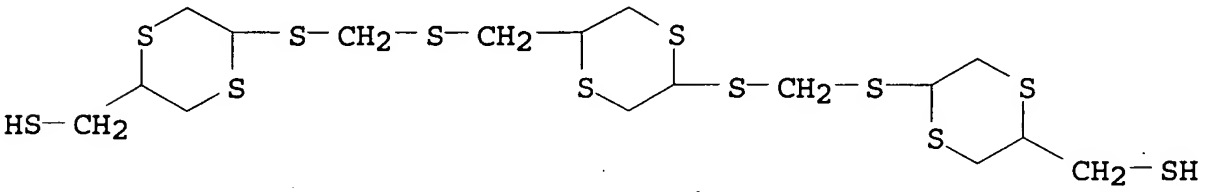
AB The compds. comprise I (R1, R2 = C2-4 alkylene, C6-12 arylene; R3 = S(R6S)q; R6 = C2-4 alkylene, C6-12 arylene, arom. heterocyclyl, etc.; q = 0-4; R4, R5 = H, Me; p = 0-6; m, n = 0-6; if p = 0, then m, n .noteq. 1, 2). Thus, a compn. contg. 2,5-bis[methacryloylthio-2-[2-[2-(ethylthio)ethylthio]ethylthio]methyl]-1,4-dithiane was

molded to give a test piece showing **refractive** index 1.646.

IT **391859-32-8**
(polymerizable thio(meth)acrylates for optical materials)

RN 391859-32-8 HCA

CN 1,4-Dithiane-2-methanethiol, 5-[[[[[5-[[[[5-(mercaptomethyl)-1,4-dithian-2-yl]thio]methyl]thio]-1,4-dithian-2-yl]methyl]thio]methyl]thio]- (9CI) (CA INDEX NAME)



IC ICM C07D339-08
ICS C08F020-38; C08F290-06; G02B001-04; G02C007-02

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 28, 35, 73

IT 814-68-6, Acryloyl chloride 920-46-7, Methacryloyl chloride
342813-90-5 342813-98-3 391859-30-6 **391859-32-8**
391859-33-9 391859-37-3 391859-38-4 391859-39-5 391859-44-2
391859-45-3
(polymerizable thio(meth)acrylates for optical materials)

L28 ANSWER 26 OF 31 HCA COPYRIGHT 2006 ACS on STN

136:103482 Synthetic resin lenses with good optical properties. Kuwata, Mutsuo; Koinuma, Yasuyoshi (Nof Corporation, Japan). Jpn. Kokai Tokkyo Koho JP 2002014201 A2 20020118, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-193439 20000627.

AB The lenses with low sp. gr., good dyeability, resistance to heat and impact, etc., are obtained by curing mixts. contg. HS(CH2CH2S)jCR1H(CH2)kCR2[(SCH2CH2)mSH](SCH2CH2)hSH (I; R1, R2 = H, C1-3 alkyl, Ph; j, h, m = 1-3; k = 0, 1) 30-90, divinylbenzene (II) and/or divinylbiphenyl (III) 5-40, 3-isopropenyl-.alpha.,.alpha.-dimethylbenzyl isocyanate (IV) 5-50, and optionally vinyl monomers (excluding II and III) 0-60%. Thus, I (R1 = R2 = H, j = h = m = k = 1) 70, II 12.5, and IV 17.5% were mixed with a radical polymn. initiator and an amine catalyst, cured in a mold, and further processed to give a test plate showing light transmittance 90%, **refractive** index (25.degree.) 1.658, and Abbe no. 33.

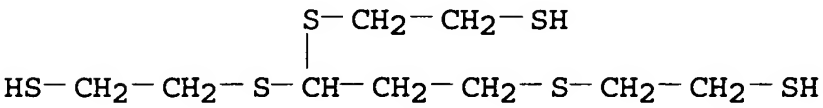
IT **389073-39-6P 389073-41-0P 389073-43-2P**
389073-47-6P 389073-51-2P 389073-54-5P
(thiourethane- and vinyl-contg. synthetic resin lenses with good optical properties)

RN 389073-39-6 HCA

CN Ethanethiol, 2,2',2''-[1-propanyl-3-ylidenetris(thio)]tris-, polymer with diethenylbenzene and 1-(1-isocyanato-1-methylethyl)-3-(1-methylethenyl)benzene (9CI) (CA INDEX NAME)

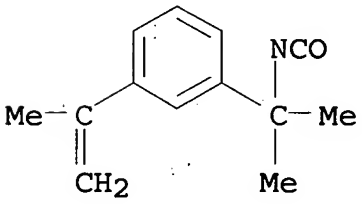
CM 1

CRN 389073-38-5
CMF C9 H20 S6



CM 2

CRN 2094-99-7
CMF C13 H15 N O



CM 3

CRN 1321-74-0
CMF C10 H10
CCI IDS

2 [D1-CH=CH2]

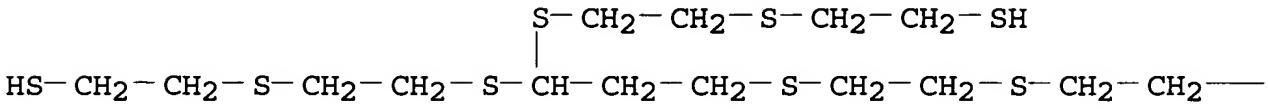
RN 389073-41-0 HCA
CN 3,6,10,13-Tetrathiapentadecane-1,15-dithiol, 7-[[2-[(2-mercaptoethyl)thio]ethyl]thio]-, polymer with diethenylbenzene and

1-(1-isocyanato-1-methylethyl)-3-(1-methylethenyl)benzene (9CI) (CA INDEX NAME)

CM 1

CRN 366014-33-7
CMF C15 H32 S9

PAGE 1-A

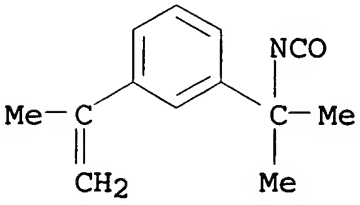


PAGE 1-B

— SH

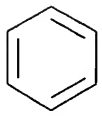
CM 2

CRN 2094-99-7
CMF C13 H15 N O



CM 3

CRN 1321-74-0
CMF C10 H10
CCI IDS



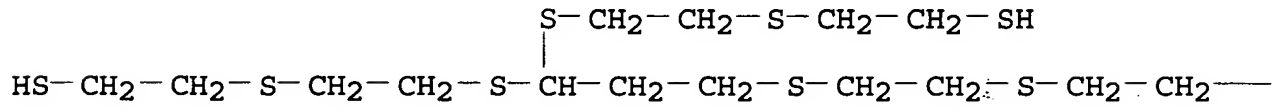
2 [D1—CH═CH$_2$]

RN 389073-43-2 HCA
CN 3,6,10,13-Tetrathiapentadecane-1,15-dithiol, 7-[[2-[(2-mercaptoethyl)thio]ethyl]thio]-, polymer with ar,ar'-diethenyl-1,1'-biphenyl and 1-(1-isocyanato-1-methylethyl)-3-(1-methylethenyl)benzene (9CI) (CA INDEX NAME)

CM 1

CRN 366014-33-7
CMF C15 H32 S9

PAGE 1-A

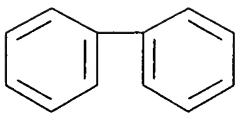


PAGE 1-B

— SH

CM 2

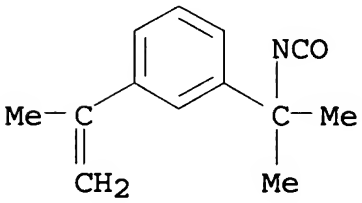
CRN 84001-03-6
CMF C16 H14
CCI IDS



2 [D1— CH═ CH_2]

CM 3

CRN 2094-99-7
CMF C13 H15 N O

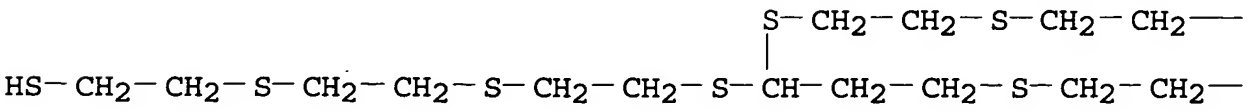


RN 389073-47-6 HCA
CN 2-Propenoic acid, 2-methyl-, (1-methylethylidene)bis(4,1-phenyleneoxy-2,1-ethanediyl) ester, polymer with diethenylbenzene, 1-(1-isocyanato-1-methylethyl)-3-(1-methylethenyl)benzene and 10-[[2-[[2-[(2-mercaptoethyl)thio]ethyl]thio]ethyl]thio]-3,6,9,13,16,19-hexathiaheneicosane-1,21-dithiol (9CI) (CA INDEX NAME)

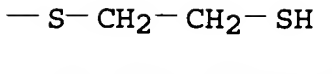
CM 1

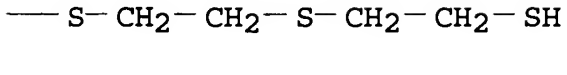
CRN 389073-46-5
CMF C21 H44 S12

PAGE 1-A



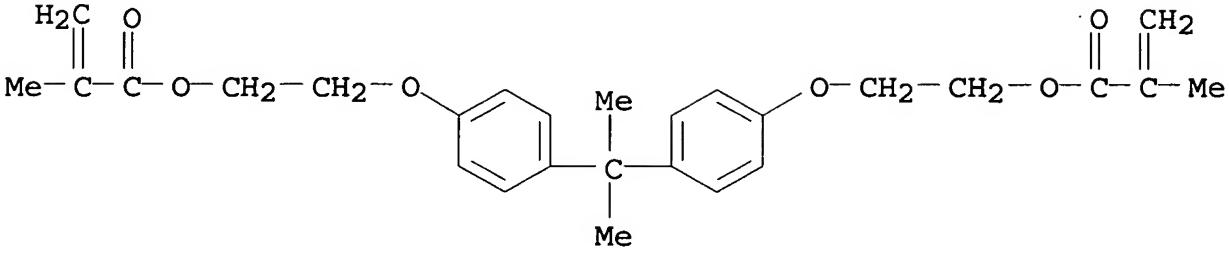
PAGE 1-B





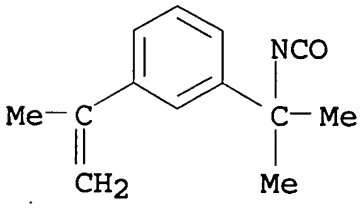
CM 2

CRN 24448-20-2
CMF C27 H32 O6



CM 3

CRN 2094-99-7
CMF C13 H15 N O



CM 4

CRN 1321-74-0
CMF C10 H10
CCI IDS

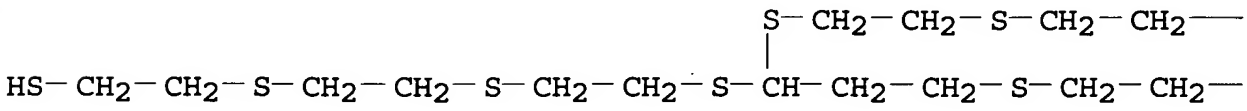
2 [D1— CH═ CH_2]

RN 389073-51-2 HCA
CN 2-Propenoic acid, 2-methyl-, (1-methylethylidene)bis(4,1-phenyleneoxy-2,1-ethanediyl) ester, polymer with ar,ar'-diethenyl-1,1'-biphenyl, 1-(1-isocyanato-1-methylethyl)-3-(1-methylethenyl)benzene and 10-[[2-[[2-[(2-mercaptoethyl)thio]ethyl]thio]ethyl]thio]-3,6,9,13,16,19-hexathiaheneicosane-1,21-dithiol (9CI) (CA INDEX NAME)

CM 1

CRN 389073-46-5
CMF C21 H44 S12

PAGE 1-A



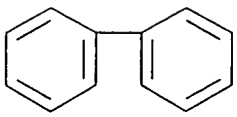
PAGE 1-B

— S— CH_2— CH_2— SH

— S— CH_2— CH_2— S— CH_2— CH_2— SH

CM 2

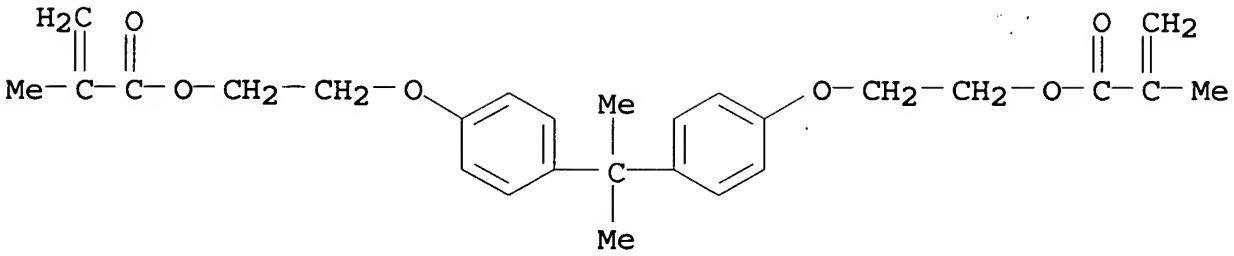
CRN 84001-03-6
CMF C16 H14
CCI IDS



2 [D1— CH═ CH_2]

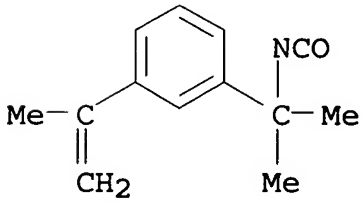
CM 3

CRN 24448-20-2
CMF C27 H32 O6



CM 4

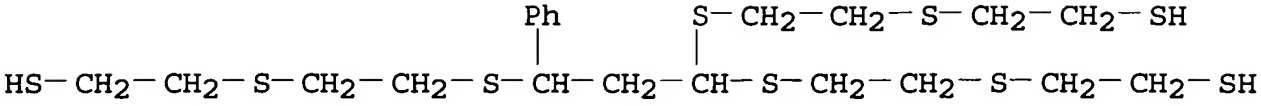
CRN 2094-99-7
CMF C13 H15 N O



RN 389073-54-5 HCA
CN 2-Propenoic acid, 2-methyl-, (1-methylethylidene)bis(4,1-phenyleneoxy-2,1-ethanediyl) ester, polymer with diethenylbenzene, ethenylbenzene, 1-(1-isocyanato-1-methylethyl)-3-(1-methylethenyl)benzene and 7-[[2-[(2-mercaptoethyl)thio]ethyl]thio]-9-phenyl-3,6,10,13-tetrathiapentadecane-1,15-dithiol (9CI) (CA INDEX NAME)

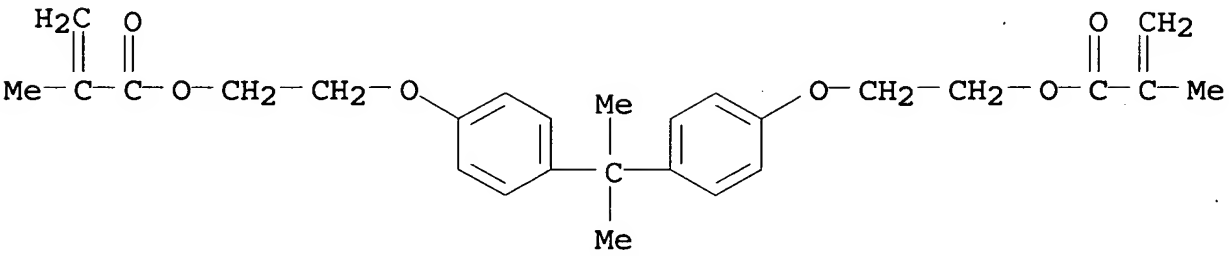
CM 1

CRN 389073-53-4
CMF C21 H36 S9



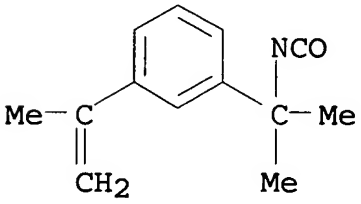
CM 2

CRN 24448-20-2
CMF C27 H32 O6



CM 3

CRN 2094-99-7
CMF C13 H15 N O



CM 4

CRN 1321-74-0
CMF C10 H10
CCI IDS

2 [D1—CH═CH$_2$]

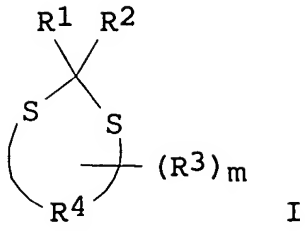
CM 5

CRN 100-42-5
CMF C8 H8

H_2C═CH—Ph

IC ICM G02B001-04
ICS C08F212-14; C08F212-34; C08F212-36; C08G018-81; C07C321-14; C07C321-20
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 73
IT **389073-39-6P 389073-41-0P 389073-43-2P**
389073-47-6P 389073-51-2P 389073-54-5P
(thiourethane- and vinyl-contg. synthetic resin lenses with good optical properties)

L28 ANSWER 27 OF 31 HCA COPYRIGHT 2006 ACS on STN
135:289812 Polythiols, their manufacture, and their uses for plastic lenses with improved **refractive** index and heat resistance.
Kuma, Shigenori; Tanaka, Mamoru; Okazaki, Teruki; Kobayashi, Seiichi; Kanemura, Yoshinobu (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2001278881 A2 20011010, 13 pp. (Japanese).
CODEN: JKXXAF. APPLICATION: JP 2000-86435 20000327.
GI



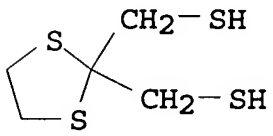
I

AB Polythiols, useful as monomers for urethane plastic lenses, are manufd. by reaction of aldehydes or ketones with compds. having .gtoreq.2 SH and thiolation of the resulting cyclic compds. I [R1-R3 = H, halo-, OH-, R5COS-, or R6CO2-substituted C1-5 alkyl; R1 = R2 = R3 .noteq. H; R4 = C1-5 (S-contg.)alkylene; R5, R6 = C1-3 alkyl; m = 1-5]. 1,3-Di(acetylthio)acetone was cyclocondensed with ethanedithiol and hydrolyzed to give 2,2-bis(mercaptomethyl)-1,3-dithiolane, which was polymd. with 4-(mercaptomethyl)-3,6-dithiaoctane-1,8-dithiol and m-xylylene diisocyanate in the presence of dibutyltin dichloride, 2-(2-hydroxy-5-tert-octylphenyl)benzotriazole, and bis[1-[1-(2-butoxy-2-propoxy)-2-propoxy]-2-propyl] phosphate to give a lens showing **refractive** index 1.670, Abbe no. 33, and heat resistance 110.degree..

IT **364753-34-4P**, 1,3-Dithiolane-2,2-dimethanethiol
364753-35-5P
(manuf. of polythiols for plastic lenses with improved **refractive** index and heat resistance)

RN 364753-34-4 HCA

CN 1,3-Dithiolane-2,2-dimethanethiol (9CI) (CA INDEX NAME)

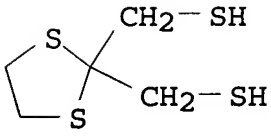


RN 364753-35-5 HCA

CN 1,3-Dithiolane-2,2-dimethanethiol, polymer with 1,3-bis(isocyanatomethyl)benzene and 2,3-bis[(2-mercaptoethyl)thio]-1-propanethiol (9CI) (CA INDEX NAME)

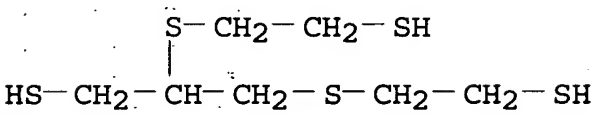
CM 1

CRN 364753-34-4
CMF C5 H10 S4



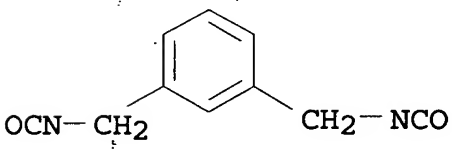
CM 2

CRN 131538-00-6
CMF C7 H16 S5



CM 3

CRN 3634-83-1
CMF C10 H8 N2 O2



IC ICM C07D339-06
ICS C08G018-38; C08G075-06; G02B001-04
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 28, 35, 73
ST polythiol manuf urethane plastic lens monomer; dithiolane bismercaptomethyl manuf plastic lens monomer; **refractive** index high lens mercaptomethyldithiolane monomer; heat resistant lens dithiolane bismercaptomethyl monomer
IT Lenses
(manuf. of polythiols for plastic lenses with improved **refractive** index and heat resistance)
IT Optical equipment
(manuf. of polythiols for plastic optical devices with improved **refractive** index and heat resistance)
IT Cardo polymers
(polythioether-polythiourethanes; manuf. of polythiols for plastic lenses with improved **refractive** index and heat resistance)
IT Polythioethers

(polythiourethane-, cardo; manuf. of polythiols for plastic lenses with improved **refractive** index and heat resistance)

IT Polyurethanes, uses
(thio-, polythioether-, cardo; manuf. of polythiols for plastic lenses with improved **refractive** index and heat resistance)

IT **364753-34-4P**, 1,3-Dithiolane-2,2-dimethanethiol **364753-35-5P**
(manuf. of polythiols for plastic lenses with improved **refractive** index and heat resistance)

IT 85977-68-0P 364753-31-1P
(manuf. of polythiols for plastic lenses with improved **refractive** index and heat resistance)

IT 507-09-5, Thioacetic acid, reactions 534-07-6, 1,3-Dichloroacetone 540-63-6, 1,2-Ethanedithiol
(manuf. of polythiols for plastic lenses with improved **refractive** index and heat resistance)

L28 ANSWER 28 OF 31 HCA COPYRIGHT 2006 ACS on STN
125:196652 Polythiol derivatives for plastic optical lenses. Kawauchi, Keiya; Sasagawa, Katsuyoshi; Kobayashi, Seiichi (Mitsui Toatsu Chemicals, Japan; Mitsui Chemicals Inc.). Jpn. Kokai Tokkyo Koho JP 08157446 A2 19960618 Heisei, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-304592 19941208.

AB The title derivs. R(CH2SH)n [R = (S-contg.) C1-3 alkanetriyl or alkanetetrayl; n = 3-4] [e.g., 2-mercaptomethyl-1,3-propane dithiol, 2,4,5-tris(mercaptomethyl)-1,3-dithiorane] are capable to polymerize with polyisocyanates (e.g., m-xylylene diisocyanate) to give high-**refractive** index lenses with good heat resistance, low water absorptivity, and high surface hardness, useful for eyeglasses, etc. (no data).

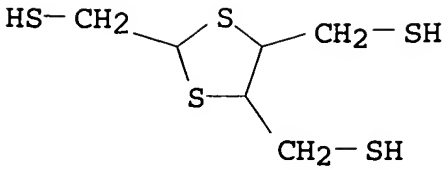
IT **180966-70-5P**, 2,4,5-Tris(mercaptomethyl)-1,3-dithiolane-m-xylylene diisocyanate copolymer **180966-76-1P**, 4,4-Bis(mercaptomethyl)-3,5-dithiaheptane-m-xylylene diisocyanate copolymer
(polythiol derivs. for plastic optical lenses)

RN 180966-70-5 HCA

CN 1,3-Dithiolane-2,4,5-trimethanethiol, polymer with 1,3-bis(isocyanatomethyl)benzene (9CI) (CA INDEX NAME)

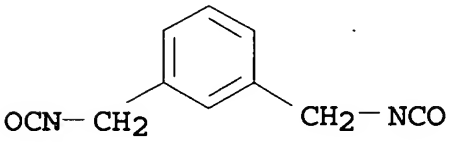
CM 1

CRN 180966-56-7
CMF C6 H12 S5



CM 2

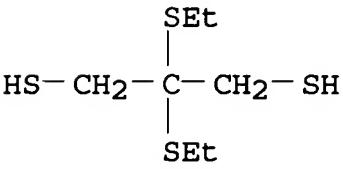
CRN 3634-83-1
CMF C10 H8 N2 O2



RN 180966-76-1 HCA
CN 1,3-Propanedithiol, 2,2-bis(ethylthio)-, polymer with 1,3-bis(isocyanatomethyl)benzene (9CI) (CA INDEX NAME)

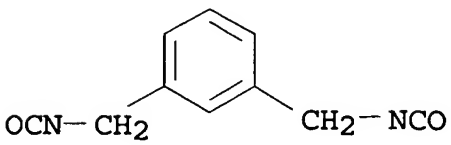
CM 1

CRN 180966-75-0
CMF C7 H16 S4

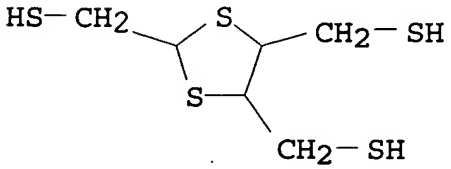


CM 2

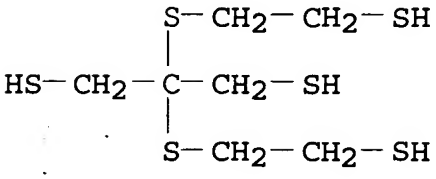
CRN 3634-83-1
CMF C10 H8 N2 O2



IT **180966-56-7P**, 1,3-Dithiolane-2,4,5-trimethanethiol
180966-58-9P
(polythiol derivs. for plastic optical lenses)
RN 180966-56-7 HCA
CN 1,3-Dithiolane-2,4,5-trimethanethiol (9CI) (CA INDEX NAME)



RN 180966-58-9 HCA
CN 1,3-Propanedithiol, 2,2-bis[(2-mercaptoethyl)thio]- (9CI) (CA INDEX NAME)



IC ICM C07C321-04
ICS C07C321-14; C07D339-06; C08G018-06; C08G018-38; G02B001-04
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 23
ST polythiol deriv polyisocyanate copolymer lens; polythiourethane optical lens **refractive** index; heat resistance polythiourethane optical lens; water resistance polythiourethane optical lens; hardness polythiourethane optical lens
IT 180966-68-1P, 2-Mercaptomethyl-1,3-propanedithiol-m-xylylene diisocyanate copolymer **180966-70-5P**, 2,4,5-Tris(mercaptomethyl)-1,3-dithiolane-m-xylylene diisocyanate copolymer 180966-73-8P, 2,2-Bis(mercaptomethyl)-1,4-dimercaptobutane-m-xylylene diisocyanate copolymer **180966-76-1P**, 4,4-Bis(mercaptomethyl)-3,5-dithiaheptane-m-xylylene diisocyanate copolymer 180966-78-3P, 2,3-Bis(mercaptomethyl)-1,4-butanedithiol-m-xylylene diisocyanate copolymer 180966-80-7P, 2,6-Bis(mercaptomethyl)-3,5-dithiaheptane-1,7-dithiol-m-xylylene diisocyanate copolymer
(polythiol derivs. for plastic optical lenses)
IT 180966-55-6P **180966-56-7P**, 1,3-Dithiolane-2,4,5-trimethanethiol 180966-57-8P **180966-58-9P** 180966-60-3P 180966-62-5P
(polythiol derivs. for plastic optical lenses)

L28 ANSWER 29 OF 31 HCA COPYRIGHT 2006 ACS on STN
114:208899 Vinyl thiol polymer resins for lenses. Mori, Kaoru; Sakamoto, Sadayuki; Oka, Koichiro (Toray Industries, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 02283731 A2 19901121 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-104253 19890424.

AB Title resins, useful for lenses, contain polymerizable addn. prepolymers prepd. from CH2:CXCO2C6H4OCOCX:CH2 (X = H, Me) and/or divinylbenzene and HSR(SH)n (R = group comprising linkage of S residue and .gtoreq.1 residues selected from CH2, CH, and C at C3-10 and S2-9 and C<S, except SS; n = 1-3) of CH2:CH/SH (R) = 1.8-2.0. Thus, a mixt. of divinylbenzene and bis(mercaptoethyl)ethyl sulfide at R = 2.0 was treated in the presence of azobisdimethylvaleronitrile at 60.degree. for 2 h to give a prepolymer, which was cast on a glass mold and treated in the presence of tert-Bu peroxyisobutylate at 60-120.degree. for 13 h to give a test piece having **refractive** index 1.64, good releasability from molds, and good heat resistance, vs. 1.64, poor, and poor, resp., for the control test piece using the mixt. of R = 1.5.

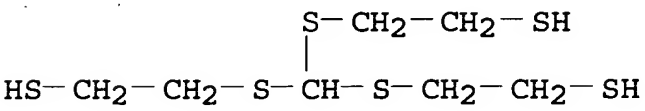
IT **133749-81-2P**
(prepn. of, heat-resistant, with good mold releasability, for lenses)

RN 133749-81-2 HCA

CN 2-Propenoic acid, 2-methyl-, 1,4-phenylene ester, polymer with 2,2',2''-[methylidynetris(thio)]tris[ethanethiol] (9CI) (CA INDEX NAME)

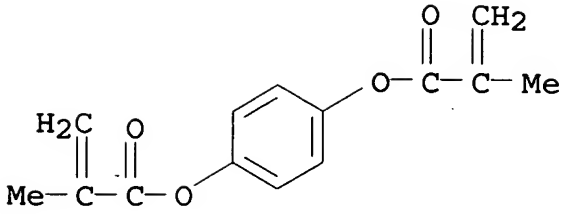
CM 1

CRN 133749-80-1
CMF C7 H16 S6



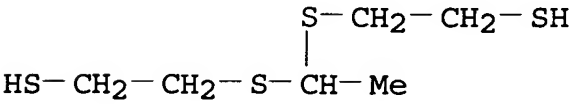
CM 2

CRN 3049-31-8
CMF C14 H14 O4

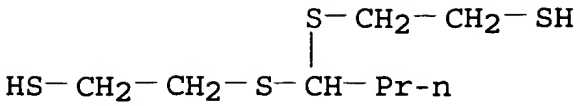


IC ICM C08G075-04
ICS G02B001-04
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 63
IT 133749-78-7P 133749-79-8P **133749-81-2P**
(prepn. of, heat-resistant, with good mold releasability, for lenses)

L28 ANSWER 30 OF 31 HCA COPYRIGHT 2006 ACS on STN
114:208508 Manufacture of (meth)acrylate resins with high **refractive** index. Oka, Koichiro; Kimura, Michio; Iguchi, Yuichiro (Toray Industries, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 02274705 A2 19901108 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-95940 19890414.
AB The title resins, useful as plastic lenses, are manufd. by polymn. of the sulfides R2R3C(SCH2CH2SR1)2 (I) [R1 = CH2:CXCO, CH2CHC6H4CH2CH2 (X = H, Me); R2, R3 = H, aliph. or arom. hydrocarbyl (when both are aliph., their total C no. is 1-6)]. Thus, I (R1 = methacryloyl, R2 = H, R3 = Me) contg. 0.1% peroxycarbonate was heated in a glass mold at 75-110.degree. to give moldings with good toughness, n 1.636, Abbe no. 38, and Shore D hardness 80.
IT **133636-81-4P**
(prepn. of)
RN 133636-81-4 HCA
CN Ethanethiol, 2,2'-[ethylidenebis(thio)]bis- (9CI) (CA INDEX NAME)



IT **133622-52-3**
(reaction of, with divinylbenzene)
RN 133622-52-3 HCA
CN Ethanethiol, 2,2'-[butylidenebis(thio)]bis- (9CI) (CA INDEX NAME)



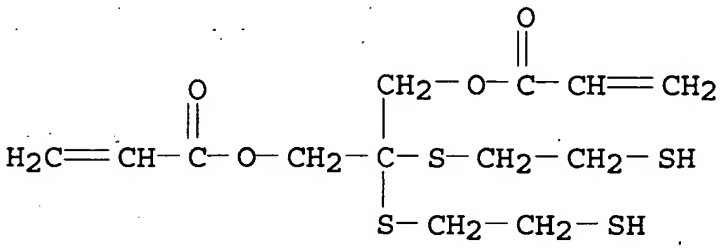
IC ICM C08F012-14
ICS C08F020-38
CC 37-2 (Plastics Manufacture and Processing)
Section cross-reference(s): 38
ST thioacrylate polymer **refractive** lens; transparent thioacrylate polymer lens; heat resistance thioacrylate polymer; ethylidenedithiodiethanethiol methacrylate polymer
IT Lenses
(plastic, thio(meth)acrylate polymers for, **refractive**, tough and light-resistant)
IT 133452-16-1P **133636-81-4P**
(prepn. of)
IT **133622-52-3**
(reaction of, with divinylbenzene)
IT 133452-17-2 133452-18-3 133452-20-7 133452-22-9 133452-24-1 133452-26-3
(**refractive** and tough, for lenses, manuf. of)

L28 ANSWER 31 OF 31 HCA COPYRIGHT 2006 ACS on STN
114:165963 Preparation of resins with high **refractive** index for optical uses. Iguchi, Yuichiro; Kimura, Michio; Oka, Koichiro (Toray Industries, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 02247205 A2 19901003 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-69060 19890320.
AB The title resins, which have good transparency and resistance to heat and light and do not give off odors during processing, are prepd. from monomers A1XCR1R2[Yp(CR3R4)q(CR5R6)t]rZA2, A1XCH2CH2SCR1R2[Yp(CR3R4)q(CR5R6)t]rZA2, and/or A1XCH2CH2SCR1R2[Yp(CR3R4)q(CR5R6)t]rSCH2CH2ZA2 [A1, A2 = RCO, RCONHCO, RCH2, RCH2NHCO, H2C:CHCH2O2C; R = H2C:CR7; R1-6 = C1-10 alkyl, H; .gtoreq.1 of R1-6 = H, .alpha. of S, and .beta. (in total) of CH2, CH, and/or C (excluding S-S; .alpha., .beta. = no. of the groups); R7 = H, Me; X, Y, Z = O, S; .alpha. = 1-5; .beta. = 1-10; .alpha. .gtoreq. .beta.; n, m = 0-4; p = 0-1; q, r, t = 0-5]. Thus, a soln. contg. (H2C:CMeCOS)2C(SMe)2 (I) 70, divinylbenzene 29, and Bz2O2 1 part was polymd. in a mold at 50-120.degree. for 15 h to give a resin showing **refractive** index 1.63 and good light resistance, vs. 1.63 and poor, resp., for a resin prepd. with p-(H2C:CMeCOSCH2)2C6H4 instead of I.
IT **133126-10-0P**
(prepn. of, with high **refractive** index, for optical materials)

RN 133126-10-0 HCA
CN 2-Propenoic acid, 2,2-bis[(2-mercaptoethyl)thio]-1,3-propanediyl ester, polymer with 2,2-bis[[(mercaptoacetyl)oxy]methyl]-1,3-propanediyl bis(mercaptoacetate) (9CI) (CA INDEX NAME)

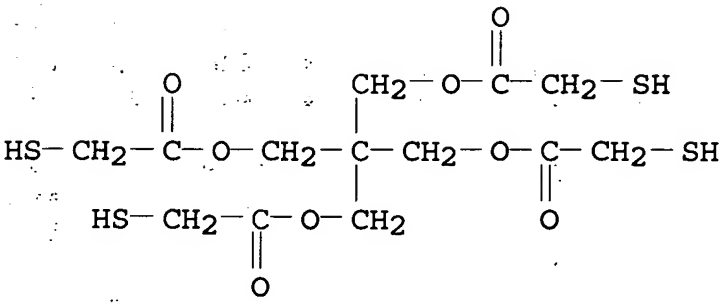
CM 1

CRN 133126-09-7
CMF C13 H20 O4 S4



CM 2

CRN 10193-99-4
CMF C13 H20 O8 S4



IC ICM C08F020-38
ICS C07C323-12; C07C327-22; C07C327-28; C07C333-10; C08F016-32; C08F018-24; C08F020-38; C08F020-58; C08F026-02; C08F028-04; G02B001-04
CC 38-3 (Plastics Fabrication and Uses)
ST optical polymer vinyl sulfide; acrylic sulfide polymer optical; light stability optical polymer; heat stability optical polymer; vinyl sulfide optical polymer; transparency vinyl sulfide polymer; **refractivity** vinyl sulfide polymer
IT **Refractive** index and Optical **refraction**
(vinyl polymers with high, sulfur-contg.)
IT Heat-resistant materials

Light-resistant materials
Transparent materials
(vinyl polymers, sulfur-contg., with high **refractive** index)

IT 133125-78-7P 133125-80-1P 133125-82-3P 133125-85-6P
133126-08-6P **133126-10-0P** 133127-82-9P 133150-45-5P
133176-78-0P
(prepn. of, with high **refractive** index, for optical materials)